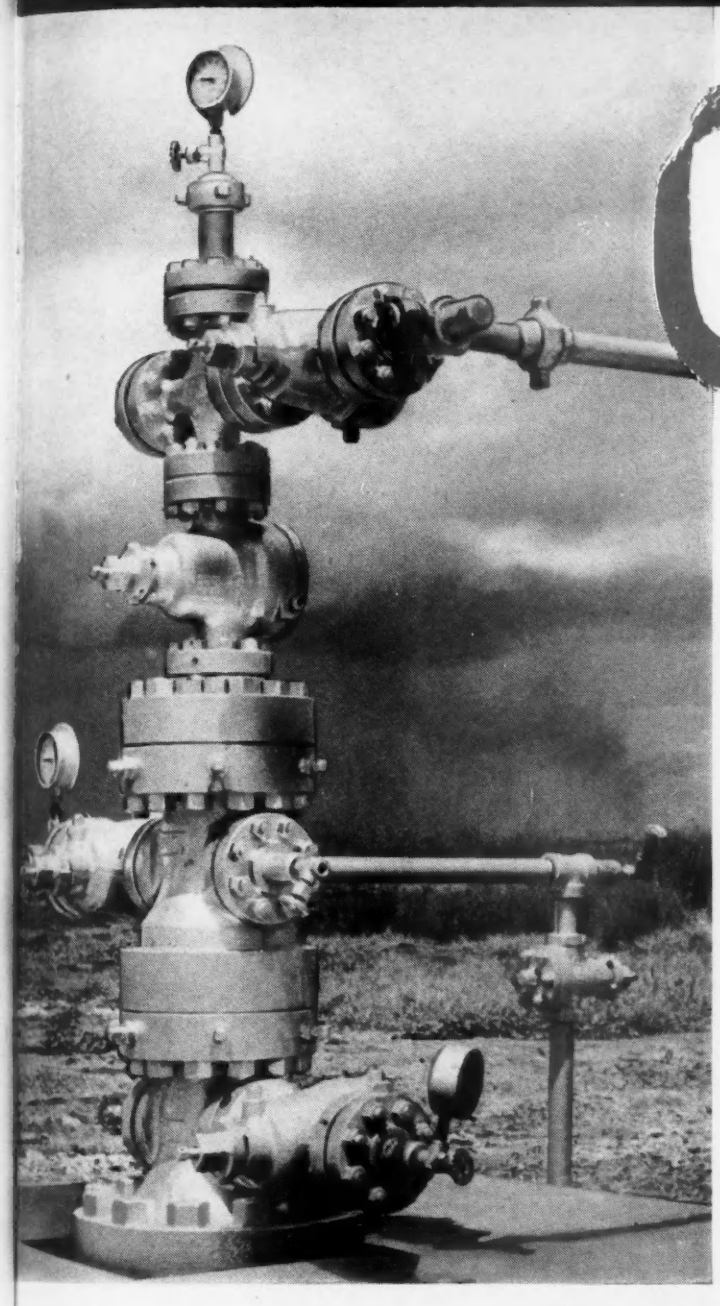
ENGINEERING LIBRARY

The OIL WEEKLY

FOR THE DRILLING, PRODUCING, PIPE LINE INDUSTRY



NORDSTROM HYPRESEAL

The Lubricated Valve with 14 Distinctive Features

1. TAPERED PLUG
   Provides intimate lapped fit.
2. SIMPLE ROTARY ACTION
   No seat separation; no deposits can intrude.
3. RESILIENT PLUG SEATING
   Prevents binding; permits lubricant distribution.
4. PRESSURE LUBRICATION
   Positive injection of lubricant to seating surfaces.
5. "SEALDPORT" PRINCIPLE
   Full lubricant seal around each port.
6. HYDRAULIC LUBRICANT JACKING
   Insures operation; permits effective lubrication.
7. SEPARATE THREADED STEM
   Carries pressure-thrust without binding.
8. INJECTION TYPE PACKING
   Renewable without disturbing valve position or line pressure.
9. CORROSION-RESISTANT
   Lubricant film protects vital seating surfaces.
10. STRAIGHT-THROUGH FLOW
    No changes in direction or turbulence-producing cavities.
11. RUGGED DESIGN
    Compact construction, heavy sections, simplicity, insure durability.
12. QUARTER TURN
    Quick and positive action.
13. EROSION-RESISTANT
    No vital parts exposed to line flow.
14. ROTARY OPERATION
    Shearing action makes seats self-cleaning.

NORDSTROM VALVE DIVISION – ROCKWELL MANUFACTURING CO.
Main Office: 400 N. Lexington Ave., Pittsburgh 8, Pa.

Atlanta, Boston, Chicago, New York, Pittsburgh, Houston

ROCKWELL

Kansas City, Los Angeles, San Francisco, Seattle, Tulsa

Export: Rockwell International Corp., 7701 Empire State Building, New York

HIGH PRESSURE CHRISTMAS TREES...

ipped with Nordstrom Hypreseal ves insure positive protection. nd opening types available. Also rchrome Coated and "Weldlined" es for abrasive and corrosive well ices. Can be repacked while under sure and in any plug position.

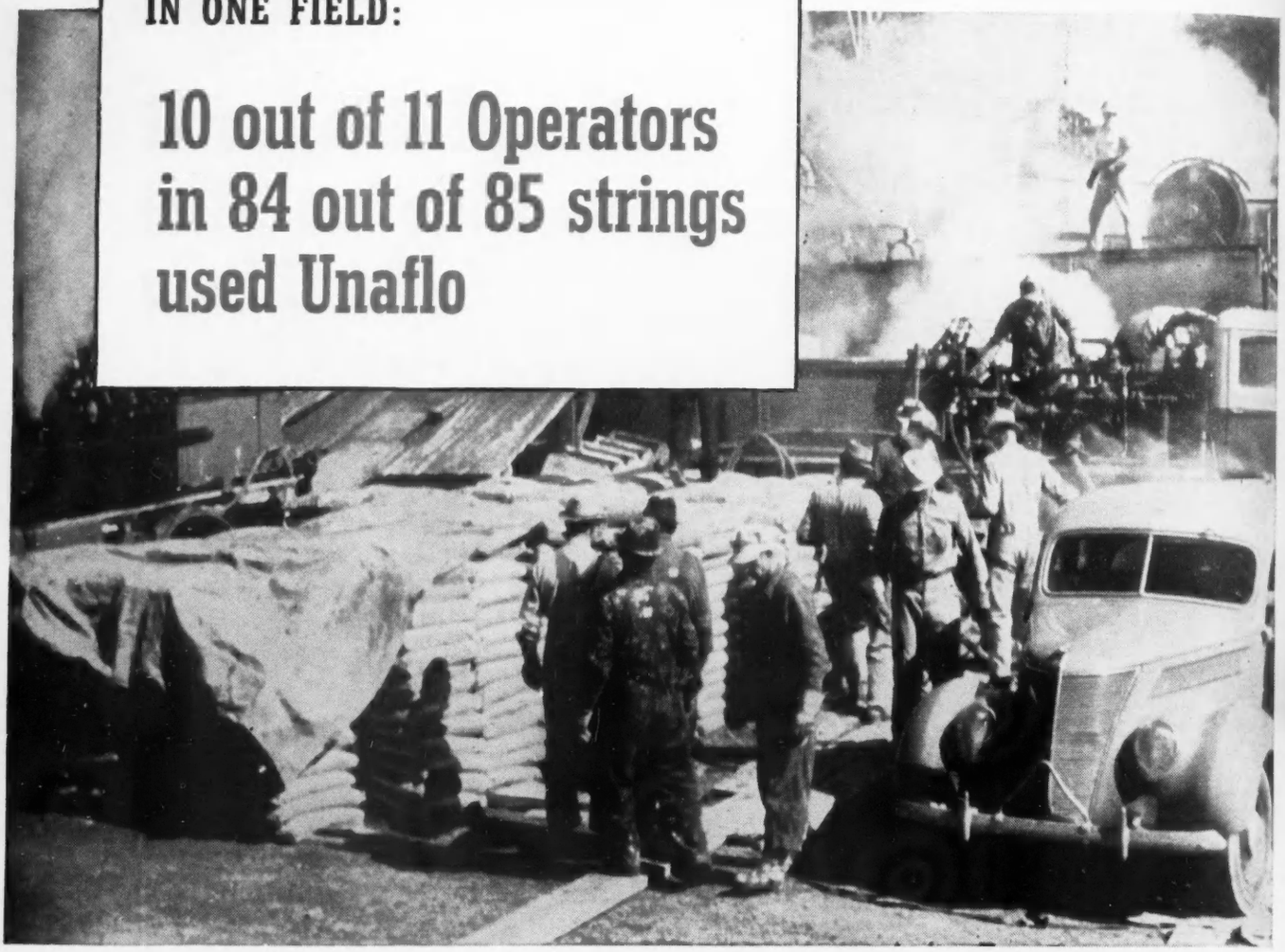
Nordstrom

LUBRICATED VALVES

CENTS PER COPY December 30, 194 LUME 17 NUMBER 5

IN ONE FIELD:

10 out of 11 Operators in 84 out of 85 strings used Unaflo



- **Temperatures averaged 150°F.**
- **Pressures never much below 3,600 psi.**
- **Strings averaged 8,500 ft. of 5½" casing.**

The operators in this field didn't gamble with trouble . . . they chose Unaflo oil-well cement.

Because of its *retarded* set, Unaflo does not stiffen prematurely when exposed to heat and pressure or when subjected to unforeseen delays. It remains fluid and pumpable during the cementing operation and then sets to a hard, impermeable seal.

OW-U-76

Send for "Unaflo Oil-Well Tables," a shirt-pocket booklet of down-the-well volumes of cement and mud. Write to Universal Atlas Cement Company (United States Steel Corporation Subsidiary), Amicable Building, Waco; Kansas City; Birmingham; Chicago; New York. Export Distributors, United States Steel Export Company, New York.

- **Unaflo *Retarded* Oil-Well Cement**
  Resistant to Sulfate Waters
- **Atlas Portland Cement—Type I**
- **Atlas Portland Cement—Type II**
  Resistant to Sulfate Waters
- **Atlas High-Early Cement—Type III**

UNIVERSAL ATLAS CEMENT COMPANY

"THE THEATRE GUILD ON THE AIR"—*Sponsored by U. S. Steel—Sunday Evenings—ABC Network*

SERVICE . . .

SUPPLY DIVISION

JARECKI MANUFACTURING COMPANY

HOUSTON, TEXAS

Sales Offices: Dallas, Texas and Wichita, Kansas

HOME OFFICE AND FACTORY: ERIE, PENNSYLVANIA

Since 1852

JARECKI

Oil Industry Supplies

DIAMOND-J . . Symbol of Service

MAKE AMERICA'S *First* SUPPLY STORES YOUR *First* SOURCE OF SUPPLY

Pipe Flanges by HARRISBURG

MADE FROM OUR OWN STEEL

To be thoroughly modern and absolutely satisfactory in every particular, pipe joints must of necessity be joined together with flanges that represent the utmost in quality and dependability.

Upon the flange rests the entire burden of a secure pipe joint . . . a joint so made that it will be permanently tight and resist shock and strain; a joint sufficiently strong to resist the high pressures carried by the pipe line. In fact, for utmost reliability the flange must produce a joint with strength equivalent to that of the pipe itself.

In using Harrisburg Drop-Forged Steel Flanges, you can be sure that all of these specifications will be met . . . that the joint will be safe and secure and entirely satisfactory in every respect.

ALL SIZES MADE TO ASA STANDARDS **ALL TYPES**

HARRISBURG STEEL CORP.

HARRISBURG, PENNSYLVANIA

Alloy and Carbon Steels. Seamless Steel CO. Liquefiers. Pipe Couplings. Slush Pump Liners and High Pressure Gas Cylinders. Drop Forgings. Forged Steel Pipe Flanges.

Looking Ahead

WITH THE EDITOR

FOR more than 11 months our editors have been getting ready for the annual YEARBOOK-FORECAST issue of THE OIL WEEKLY which will be your issue of February 10, 1947. Week by week, reports on well completions have been maintained, in 22 loose-leaf books. The record of each well drilled by a company, its geographical location, its depth and whether or not it is a wildcat is placed on the more than 4850 sheets in these 22 books.

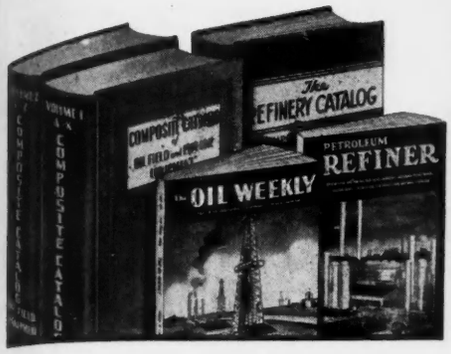
Scores of different printed or mimeographed forms devoted to other data are filled out regularly as the year progresses: Production (domestic and foreign), imports, exports, stocks, etc., etc. Normally, in addition to our 15 district editors and correspondents, three employes of the editorial department spend ALL their time preparing figures for presentation in weekly issues of the publication and in getting ready for the big push on the YEARBOOK-FORECAST issue. As the issue nears publication date—and two or more months ahead is the time when we see the signs of the push having started . . . additional personnel is added.

That is why our YEARBOOK-FORECAST issue is regarded so highly by economists of the industry. One such man, recognized as being among the "tops" in his profession, said recently, "I do not see how you can possibly handle the great amount of valuable material you assemble in your YEARBOOK-FORECAST issue. It is the only one of its kind that I keep in my desk for quick reference."

If he could be in Houston right now he would see how it is done . . .

But anyway, you and other readers of THE OIL WEEKLY will get the benefit of all this work when you receive your YEARBOOK-FORECAST issue on February 10, 1947.

THE OIL WEEKLY, published every Monday. Entered as second class mail matter December 23, 1916, at the post office at Houston, Texas, under act of March 3, 1879.



Specialized Oil Publications of
THE GULF PUBLISHING COMPANY
Box 2608, Houston (1), Texas

The OIL WEEKLY and The COMPOSITE CATALOG for the drilling-producing-pipe line industry

PETROLEUM REFINER and The REFINERY CATALOG for the refining-natural gasoline industry

Member Audit Bureau of Circulation and Associated Business Papers, Inc.

EDITORIAL STAFF
WARREN L. BAKER, *Editor*
SILAS B. RAGSDALE, *Managing Editor*
L. J. LOGAN, *Associate Editor*
ELTON STERRETT, *Engineering Editor*

DISTRICT EDITORS
Washington: Albee Bldg. (5)
BERTRAM F. LINZ
Fort Worth: W. T. Waggoner Bldg. (2)
H. H. KING
New York: 250 Park Ave. (17)
GEORGE O. IVES—HENRY OZANNE
London: 62 Redcliffe Square (SW. 10)
E. N. TIRATSOO
Tulsa: Hunt Bldg. (3)
ANTHONY GIBBON—WILLIAM P. STERNE
Los Angeles: W. W. Wilson Bldg., Huntington Park
GILBERT M. WILSON
Austin: Drawer M, Capitol Station (21)
R. W. BYRAM
Houston: 3301 Buffalo Drive (6)
JAMES S. CRITZ — AL REESE
WELDON B. HILL — J. E. KASTROP
CECIL SMITH

ADVERTISING STAFF
TOM W. NELSON, *Advertising Manager*
New York: 250 Park Ave. (17)
DICK SWINSKY — ROBERT N. CAIRD, JR.
NELSON BIGELOW
Cleveland: 1010 Euclid Ave. (15)
ROGER MOTHERAL
Chicago: 332 S. Michigan Ave. (4)
H. G. FITZPATRICK
Tulsa: Hunt Bldg. (3)
J. F. CARTER, JR.
Los Angeles: W. W. Wilson Bldg., Huntington Park
J. W. CURTS
Houston: 3301 Buffalo Drive (6)
CHARLES WYATT — BILL ATCHESON

CIRCULATION DEPARTMENT
J. HOWARD DONAHUE, *Manager*

Published every Monday. Single copies 25 cents (except special issues). Subscription price: domestic and foreign, $2 a year; 2 years, $3; 3 years, $4. Advertising rates on application.
Copyright 1946 by The Gulf Publishing Company.

The OIL WEEKLY

ENGINEERING NEWS STATISTICS

R. L. DUDLEY, President, Publisher A. L. BURNS, General Manager

Contents — DECEMBER 30, 1946

VOLUME 124, No. 5

Technical and Feature Articles

BIG DIESEL-ELECTRIC BARGE DRILLING RIG 28
By Humble Oil & Refining Company's Production Department

LABORATORY SIMULATES FORMATION CONDITION 33
By Gilbert M. Wilson

PERFORATING CASING WITH SHAPED EXPLOSIVE CHARGES 36
By Robert H. McLemore

PRINCIPAL USES OF FLUOROLOGS 41
By Orton E. Campbell

NOVEMBER EXPLORATION EXCEEDS 1945 PERIOD 49

COMPLETIONS BELOW OCTOBER TOTAL 53

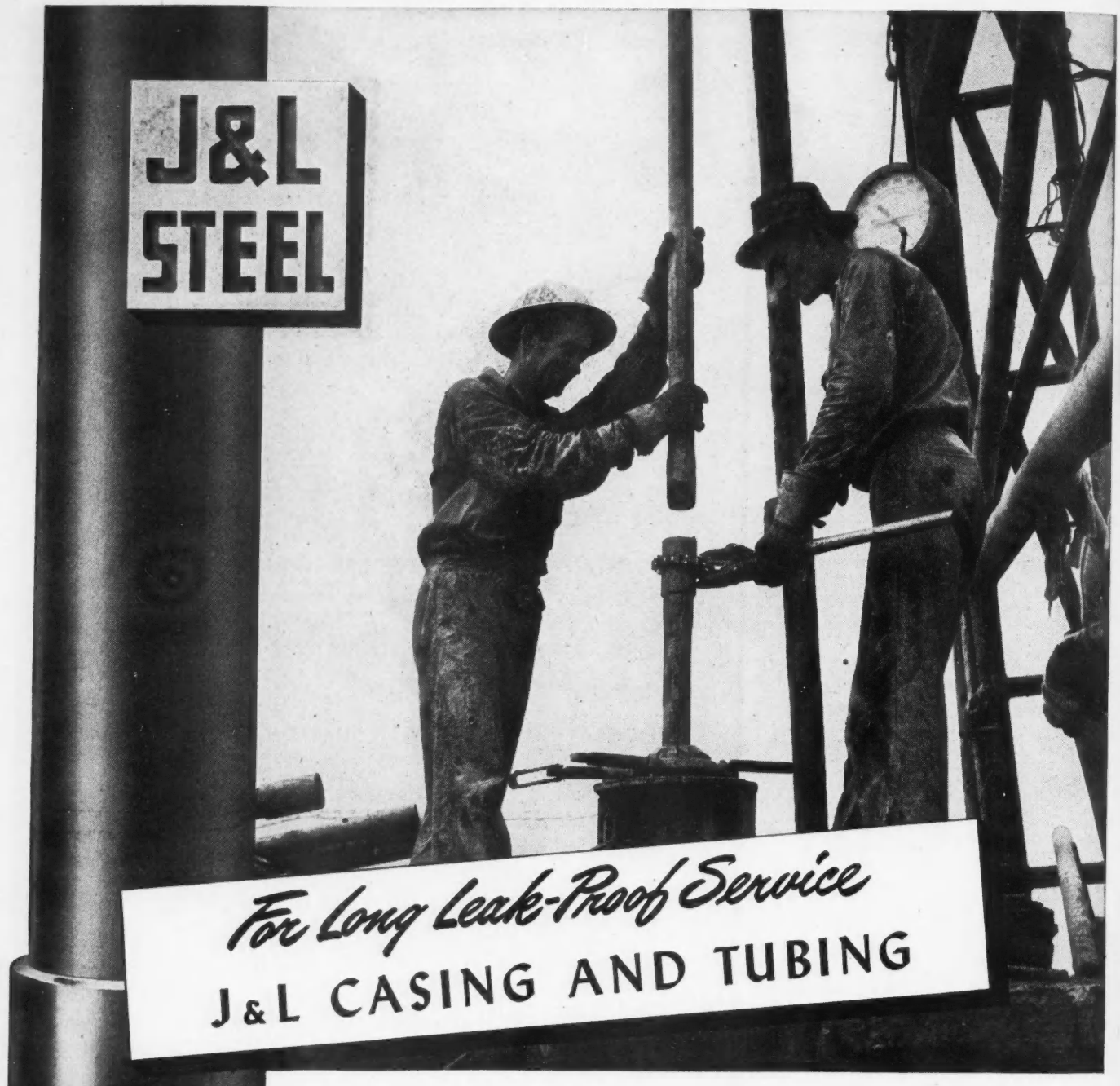
POWER DISTRIBUTION SYSTEMS FOR OIL FIELD PUMPING SERVICE, PART 2 54

DRILLING HINTS 62

CARTER STRESSES FIRE PREVENTION 64

News and Departments

LOOKING AHEAD 4
THE OUTLOOK 19
THE CHANGING PANORAMA 21
THE WEEK'S NEWS 23
CRUDE PRODUCTION 25
PIPE LINE NEWS 27
TAX REVIEW 47
NEW EQUIPMENT, LITERATURE 56
FIELD OPERATIONS 66
EXPLORATORY COMPLETIONS 81
SQUEAKS FROM THE BULL WHEEL 84
MEN IN THE INDUSTRY NEWS 85
MANUFACTURERS' NOTES 87
ADVERTISERS' INDEX 88



J&L casing and tubing is made to give you long leak-proof service. First of all the J&L Controlled Quality method of manufacture insures that the steel is exactly right. Then this steel is rolled by skilled, experienced men into uniform casing and tubing. Precision methods of threading and exacting inspection complete the job to give you the best in casing and tubing for long, trouble-free service.

JONES & LAUGHLIN STEEL CORPORATION

PITTSBURGH 30, PENNSYLVANIA

THE CHANGING Panorama

Prescription: Avoid Every Excuse!

WE WOULD be among the last to try battle with our friends on the West Coast who comprise the Oil Producers Agency of California, but we think they are on the wrong tack in their current discussion of "Oil and Federal Control."

Secretary Krug's recent statements regarding need for conservation and his accompanying admonition that states without conservation laws should enact them in order to ward off such federal legislation is the basis for the agency's most recent discussion:

"California has many laws to prevent wasteful practices in the production of oil. It has laws to prevent infiltration of water into oil sands, to prevent waste of natural gas, to preserve reservoir pressure, and to prohibit the crowding of wells too closely together. To these waste-preventing laws must be added the 16-year efforts of a voluntary group of the oil industry, supported by large and small producers alike, which establishes maximum efficient rates of production for each field in the state. California has no law which specifically controls rates of production, a characteristic of the conservation of other oil-producing states. No one maintains that California's program is perfect; neither does anyone maintain that any state's conservation law is perfect. But nowhere has the federal government shown that its control of conservation practices would be perfect, or in any way superior to the present methods . . . We think that it would be better for the federal government to let well enough alone."

It is true that California has some excellent regulations and certainly THE OIL WEEKLY would not debate the wisdom contained in the last sentence above, but it doubts very much whether the ambitious of Washington would concur. But the only way of avoiding meddlesome federal fingers is for the states, including California, to take the not-so-new advice being advanced now by Secretary Krug and strengthen their conservation laws or enact such laws if none show currently on their statute books. California should fall in step with other states and bend its back so that Washington will have NO excuse—much less a reason—to take over the task of oil regulation.

It's hardly enough to say that no "state's conservation laws are perfect" or that "the whole record of federal controls makes poor reading." The fact remains that states—note the plural form, which is intended to include California along with all other oil-producing states—had best busy themselves with perfecting oil and gas regulatory legislation and GETTING IT ON THEIR STATUTE BOOKS or expect continued and more aggressive efforts on the part of Washington to centralize such powers.

The Job Ahead For Our New Congress

"A SURVEY by the National Association of Manufacturers discloses that through direct and indirect taxes in 1946 the government took away and spent some $27 per family as compared with $8 and $11, respecitvely, per family in 1929 and 1939."

That's one paragraph that caught our eye during the past week. Then another came along that read as follows:

"Strikers lost 102,525,000 man days during the ten-month period January-October, 1946. November coal troubles added millions more."

Without reviewing any further national ills, here the new Congress has a couple of tasks aching for remedy.

Governmental economy is a MUST. But, let it be understood right from the start, no MUST-ER than wise labor regulatory legislation.

(See page 23 for discussion of other problems relating to the oil industry which face the new Congress.)

Jurisdiction Over Continental Shelf

WALLACE E. PRATT, retired vice president of Standard Oil Company (New Jersey) adds the weight of his opinion to those that hold that the continental shelf in reality belongs to the abutting states. In recent talks Pratt noted that the form of President Truman's proclamation reserving the continental shelf for the federal government raises doubts and uneasiness. Several states already have declared their ownership and control of the waters overlying the continental shelf adjacent to their shores and extending out to sea beyond the conventional three-mile limit.

"Ours is an indissoluble union of indestructible states," Pratt said, quoting Professor Bochard of Yale that the United States had acquired new territory in the past within the present continental limits, but only for the purpose of erecting new states and in such acquisitions, title to the bed of the adjacent sea has always passed to the abutting state when that state was admitted to the union.

Accordingly, the effect of the President's proclamation should be to extend the boundary lines of the abutting states out to the limits of the continental shelf, Pratt believes. No part of the open sea overlying the continental shelf could possibly be erected into a new state and so, if the U. S. extends its boundaries seaward, it must automatically extend seaward the boundaries of the abutting states to include the territory newly acquired.

If this is the effect of the proclamation, then the continental shelf should come under the jurisdiction of the several abutting states, not the Department of the Interior.

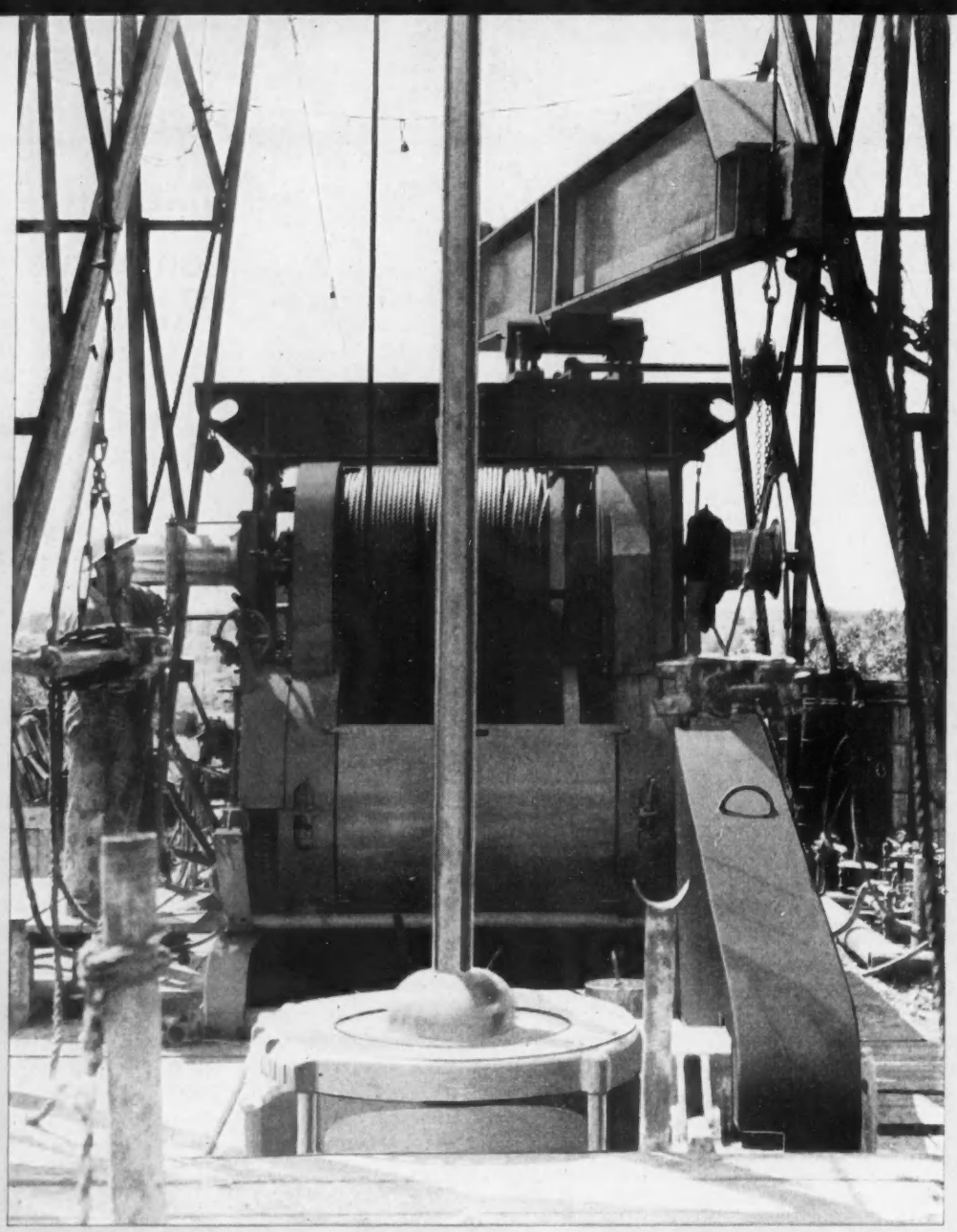
Incidentally, Pratt believes that there is probably two and one-half times as much oil to be found beneath the continental shelves and continental slopes of the world as there is under the dry land.

Some STRAIGHT-ON Fact

About a "Cardwell" Double Drum Combinati Drilling Rig. Now Available with Three Drun

The only rig in the world with rotary and cable tool assemblies mounted and ready for immediate use.

This rig can be used for drilling from grass roots to bottom with either rotary or cable tools.



Ideal for dri in, pumping tentials, well icing and ro workover job

A real profit m er because versatile rig be kept busy rotary, cable or servicing j

This Model R combination rig can be used for drilling to 5,000 feet with 4½" drill pipe, cable tool drilling to 7,500 feet, and servicing or rotary workover to 10,000 feet. If desired, a spudding assembly can be had in place of beam. Spudder is interchangeable in the field with rotary assembly.

CARDWELL ALLSTEEL
THIS TRADE MARK INSURES HIGHEST QUALITY AT LOWEST PRICE

CARDWELL MFG. CO. INC.
FORMERLY ALLSTEEL PRODUCTS MFG. CO.
P. O. Drawer 2001 · Cable Addresses: "ALLSTEEL", WICHITA - "CARDSTEEL", NEW YORK
Wichita, Kansas, U. S. A.

"CARDWELL" RIGS LAST LONGER AND REQUIRE FEWER REPAIRS

THE WEEK'S NEWS

MATTERS of first importance to the oil industry will bulk large in the activities of the new Congress, which faces a schedule so heavy that a prolonged session may be necessary. See below.

Reciprocal Trade Pacts—A difference in viewpoint in the oil industry as to the importance of further cuts in import excise taxes in new reciprocal trade agreements is indicated by failure of some groups to submit briefs to the Committee for Reciprocity Information. Republican members may start Congressional agitation for suspension of negotiations. Page 26.

Middle East Oil Deal—Standard Oil Company (New Jersey) and Socony-Vacuum Oil Company have reached an agreement to buy a large quantity of Middle Eastern crude from Anglo-Iranian Oil Company. This deal is separate from the same companies' negotiations for part ownership of Arabian-American Oil Company. Page 25.

Trans-Arabian Line—Burt Hull is departing soon for the Middle East to study the situation as regards a 26 and 30-inch Trans-Arabian pipe line. Page 27.

Tidelands Case—Argument before the Supreme Court on the California tidelands case has been set for the week of February 3, but further delay is not unlikely. Page 25.

Mexican Labor Troubles—Pemex Director Bermudez is asking Mexico's labor conciliation board for certain rights which, he thinks, will relieve the oil industry there of labor-leader dominance. See story below.

Texas-East Gas Project—Trans-Continental Gas Pipe Line Company, one of the high bidders for the Big Inch systems, has applied to FPC for authority to construct a natural gas line from Texas to the East Coast. Page 27.

Stripper Subsidy—With posted prices now more than 35 cents above former OPA ceilings, the Office of Temporary Controls has eliminated all payments under the stripper-well premium plan except for Pennsylvania grade crude. Page 25.

Reserves Estimate Methods—Presentation of divergent views on the desirability of developing a better technique for the estimation of oil reserves may create an "issue" at the next meeting of the National Petroleum Council. Page 24.

Problems Piling Up for New Congress Include Many Dealing With Petroleum

Subjects of extreme importance to the oil industry are scheduled for consideration by the incoming Congress, in which for the first time in 16 years the Republican membership will have a compelling voice.

Including many other matters, however, the schedule facing Congress is so long that it is doubtful if adjournment will be possible in July as provided by the Congressional Reorganization Act. A longer session could be agreed upon by resolution.

Heading the legislative agenda in importance to the petroleum industry are matters of policy on natural gas, oil and rubber.

Of paramount importance will be congressional action regarding the Natural Gas Act. Throughout 1946, the Federal Power Commission conducted an investigation of the natural gas industry which will be the basis of FPC's report. Any recommendation by FPC for extending the commission's authority under the Natural Gas Act to the point where it reaches into the production of gas and bringing it into conflict with oil, would bring on a real fight.

Problem of the Big Inch

The recent expose by the House Surplus Property Committee of the inept handling of the Big Inch disposal by the War Assets Administration has thrown the question of the future use of the lines into Congress, to which WAA will recommend that the lines be sold to the highest bidder without restriction as to use. Delegations from the coal-producing states will oppose this recommendation—although Pennsylvania this month was glad enough to have some natural gas piped into the state through the Big Inch system. Original bids showed a margin of $20 million between the best offer for oil and the best bid for gas, which will be a factor with an economy-minded Congress.

On oil policy, Congress will have the benefit of the report of the petroleum committees of House and Senate, both of which are putting the finishing touches to their reports. Any legislation resulting likely will stress the importance of maintaining a strong domestic industry through the encouragement of exploration and development of our own resources and will demand that American nationals operating abroad be given free access to supplies without discriminatory restrictions, imposed either by the country in which they operate or by any so-called world agreement.

Legislation will be necessary to develop whether the war-born synthetic rubber industry is to have a place in our peacetime economy so that in the event of another emergency the country will be prepared.

Congress is expected to continue its support of the Bureau of Mines' program for developing commercial methods for production of synthetic fuels from oil shale and coal, but the question of exploration of the Continental Shelf appears to have been eliminated, for the present at least, by the Budget Bureau's refusal to approve funds sought by the Interior Department for such work.

Tidelands Controversy

Another underwater issue, however, may be revived if the Supreme Court holds that title to the California oil-bearing tidelands lies with the federal government. Such a decision would result in the immediate introduction of legislation to cede title to all tidelands to the states which in the past thought they actually possessed it.

The future of the Oil and Gas Division will be decided by the appropriations committees when they parcel out funds for the Interior Department. Another question is that of water pollution, for which Congress for years has been seeking a remedy.

Oil also shares with other industries a deep interest in other matters, chief of which is tax reduction. It now appears unlikely that a 20 percent cut in individual income taxes across the board can be made, as planned. No general tax revision is expected to be attempted in 1947, deferring until the following year any action to eliminate some of the tax privileges enjoyed by cooperative organizations, but there may be action to eliminate the wartime excise taxes on gasoline and other products.

Strong pressure will be exerted for

Bermudez Seeks Cure Of Oil Labor's Ills

Petroleos Mexicanos' new General Manager Bermudez, in order to relieve the Mexican oil industry from labor-leader dominance, has asked Mexico's labor conciliation board for:

Complete revision of the Pemex wage scale,

New labor contracts modifying clauses that restrict management's powers,

The right to discharge excess employes,

And the right to fill directive, administrative, inspection, and vigilance positions with non-union personnel.

Bermudez, since his appointment by President Aleman, has given close study to the oil industry's labor problems. Apparently the road which he has chosen, as indicated above, is a result of the almost continuous conferences which have engaged him for the past several weeks.

action on legislation strengthening the anti-trust laws in the interest of small business and veterans going into business for themselves, and Senator Joseph C. O'Mahoney of Wyoming, a leader of the anti-monopoly bloc, will push a bill to regulate trade associations, labor unions, etc.

There are indications that a drive will be made to block the State Department's proposed negotiation of a new reciprocal trade agreement with 18 countries, in which many petroleum products are scheduled to be discussed with a view to further lowering the excise taxes on imports.

Centralization of government research and the enlistment of private research in a national program of scientific investigation to be directed from Washington, pressed last year by the administration, is expected to be taken up against.

Labor legislation, of course, will be prominent and the administration will be unable to prevent Congress from writing the rules under which the unions, and particularly union leaders like John L. Lewis of the coal miners and James C. Petrillo of the musicians, will be required to operate.

A matter which could come up for Senate disposal is the proposed Anglo-American oil agreement. However, the treaty may fade from the picture in the Foreign Relations Committee and never reach the Senate floor.

Controversy May Develop in NPC Over Method of Estimating Reserves

A suggestion by former OGD Director Ralph K. Davies that the National Petroleum Council make a study of the adequacy of domestic petroleum reserves may develop a controversy if brought up at the next meeting of the council January 21.

The recommendation, one of three considered by a council's agenda committee, apparently involves a difference of opinion over the method, but not the reliability, of the American Petroleum Institutes' studies of reserves.

In 1943, exploring the supply situation, PAW questioned the desirability of using API reserve data to chart the trend of discovery because annually the institute included revisions and extensions of known fields in the reserves for the year in which the development took place. This, it was contended, made it appear that large new reserves were being discovered each year and masked the fact that really new discoveries were falling short of balancing production.

Difference in Methods

To show the situation more clearly, the PAW production division developed a method of evaluating the reserve by listing only the actual new discoveries of a given year, and dating back to the discovery year any revisions or extensions necessary as a result of later development.

Thus, if a field originally evaluated at 5 million barrels in 1940 is found by development work in 1945 to have a potential of 50 million barrels, the additional 45 million barrels is credited to 1945 under the API method but to 1940 by the PAW system.

It was emphasized that there is no difference in the final figures, and that the total estimated underground reserve on any given date is about the same when figured by either system, but the PAW method, it was contended, gives a more accurate showing of the new reserves actually discovered in a given year.

With other operating procedures, the PAW method of compiling reserves was inherited by the OGD, and presumably is being set forth as the basis for both the study of the adequacy of reserves and the compilation of statistics on a world-wide basis, also suggested to the council.

A spokesman for OGD said that all Davies had in mind when he submitted the proposed program was that the council should decide what the reserves are and whether they are adequate to meet the future needs of the country, military as well as civilian.

It was Davies' idea that by developing statistics showing that the volume of virgin oil found is falling far short of withdrawals, attention could be focused in Congress and elsewhere upon the need for greatly accelerated exploration and for a domestic oil policy calling for a strong and enterprising industry.

The basic difference between the API and PAW methods of evaluating reserves, is that while, by crediting to later years revisions and extensions of previously discovered fields, the former has shown a steady increase in reserves, the PAW figures show that the peak of known reserves was reached in 1938 at about 24.5 billion barrels, and thereafter there was a decline as the rate of consumption surpassed the rate of discovery.

Founder of Wilcox Firm Dies in His Tulsa Home

Homer F. Wilcox, 69, prominent Tulsa oil man and founder of H. F. Wilcox Oil & Gas Company, died at his home in Tulsa December 27 of a heart ailment.

Wilcox moved to Tulsa from Buffalo, N. Y., in 1916. In opening the Wilcox pool, Tulsa County, near the Bixby townsite, he was the discoverer of the Wilcox sand zone of Oklahoma, one of the state's most productive oil horizons.

He retired from all active business four years ago and sold his company, which was renamed the Wilcox Oil Company.

Antiquity of Oil

— A Review —

FROM our erudite friend of many years standing, E. DeGolyer of Dallas and the rest of the world, we have received a most interesting and instructive work dealing with the antiquity of the oil industry. It is a beautifully executed brochure and contains some very unusual illustrations, including one of a geologist in the days of Gerogious Agricola when wiggle sticking was evidently a genuine science. It also shows the seal of the village of Fredonia in New York, dated 1829, which the author interprets as showing "conventionalized gas flares," but which look very much like burned-down candles to us. However, inasmuch as the author said they were gas flares, gas flares they are. Another illustration shows an oil man of antiquity, wearing a headgear which is still in vogue with many ladies of our days, standing with his pitcher collecting a flow of what we presume is presumed to be petroleum. Something which looks like it might be an ancient faucet handle appears just above the oil stream but we'll pass that.

What intrigues us most is DeGolyer's recounting of an episode in the life of a handle-bar mustachioed gentleman of the old school who maintained that Job of Holy Writ was an oil man. Questioned as to his evidence on this subject, the gentleman with the handlebars quoted from the Book of Job, chapter 29, verse 6, which, when we checked up on De we found did actually read ". . . and the rock poured me out rivers of oil." What De didn't quote his friend as saying is that butter must have played a big part in the geological explorations of that ancient day because verse 6 reads in full: "When I washed my steps with butter, and the rock poured me out rivers of oil." If De will complete his Biblical reading he may have something to take the place of geophysics.

Finally, in his own author's note, DeGolyer offers it as the opinion of his research department that Job was a geologist and, having had his readings lead to the Scriptures by his mustachioed friend, cites the following as evidence: "Where was thou when I laid the foundations of the earth? Declare if thou hast understanding. Who hath laid the measure thereof, if thou knowest? or who hath strenched the line upon it?" They rather incline to his having been a mining geologist, citing his speech (Job 28:1), "Surely there is a vein for the silver, and a place for the gold where they find it."

We can always trust DeGolyer to come forth with something different, and worthwhile. He has done it again.

—R.L.D.

Lead Controls Cancelled

All wartime controls on lead metal have been revoked by the Office of Temporary Controls, eliminating all limitations on the quantity of lead that manufacturers may purchase or use.

Jersey Standard and Socony-Vacuum In Deals for Middle Eastern Crude

In a further move to acquire substantial quantities of Middle East crude, Standard Oil Company (New Jersey) and Socony-Vacuum Oil Company have reached an agreement with Anglo-Iranian Oil Company for the purchase of a large amount of crude from the latter company over a period of 20 years. The move is apparently aimed toward bringing the companies' future crude oil supply position in European areas gradually into balance with anticipated market demand.

This purchase comes immediately after the announcement that the Jersey company and Socony-Vacuum are negotiating for the purchase of an interest in Arabian-American Oil Company which operates the Saudi Arabian fields in the Persian Gulf area, but the two deals are entirely separate.

Details are yet to be worked out as regards the daily volume of crude to be delivered, prices paid, points of delivery, etc., but the discussions are being held on the basis of a total amount of perhaps a billion barrels of crude over the period of the contract.

Little doubt is held but what the crude is destined for European markets, since at this time it does not seem practical for Middle Eastern Persian Gulf crude to attempt to compete on a large scale in the Western Hemisphere, considering a price differential under which the basic price advantage of 66 to 69 cents on the part of Persian Gulf crude would be dissipated in canal tolls and tanker rates. However, one point under discussion is the possibility of a pipe line from Abadan, the point of confluence of Anglo-Iranian's pipe line system, to a port on the Mediterranean which would make competition with Caribbean crudes possible. Such a line, tentatively planned, would be jointly owned with an operating company yet to be decided upon. Shortages of steel and rolling capacity for large pipe make completion of any such line several years in the future.

Would Supply Europe

Anglo-Iranian, holding interests in producing properties in Iraq and Kuwait in addition to Iran, will be in a position to deliver the crude contracted for from any of these, as long as the grade is available in sufficient quantities.

An official statement by Standard Oil Company (New Jersey) regarding the supply of oil to meet expected European demand said that "affiliates of the company now supply some 20 percent of this market, primarily from the Western Hemisphere since the company now has considerably less than 5 percent of Middle East crude oils to supply this market. Anticipated pressure on Western Hemisphere crude oil supply, which over the next two decades is expected to be about equaled by the increasing Western Hemisphere demand, would thus be relieved by gradually substituting Middle East for Western Hemisphere crudes. Another result of these proposals would be to make crude oil available to Standard-Vacuum Oil Company, a 50 percent-owned Jersey affiliate with producing, refining, and marketing operations in the Far East. This would materially strengthen Standard-Vacuum's position as this company before the war produced oil only in the Netherlands East Indies and this production was never sufficient to meet the market demand in the Far East."

Refining Capacity Changes

It is expected that the increase in crude supply will require some increases in refining capacity of Jersey company affiliates in European areas, but no definite plans have been made as yet.

The agreement for acquisition of interest in Arabian-American Oil Company would involve purchase by the Jersey company of an approximate 30 percent interest in Arabian-American with a reported 10 percent interest to be acquired by Socony-Vacuum. Standard Oil Company of California and The Texas Company would share alike in the remaining 60 percent. Trans-Arabian Pipe Line Company, a subsidiary of Arabian-American, has plans for a pipe line from the Persian Gulf to a Mediterranean port. (See page 27.)

A third deal involving Jersey Standard and Socony-Vacuum in the Near East is the report that the two companies will add approximately $13.4 million to their joint oil investment in Iraq. The subscription will be made through Near East Development Corporation in which Jersey and Socony hold joint ownership. Near East Development, in turn, owns the 23¾ percent American share of Iraq Petroleum Company, Ltd.

The new funds will be used to double Iraq Petroleum's present pipe line capacity to the Mediterranean and an extensive exploration program.

Crude Oil Production in the United States

(Estimates compiled by THE OIL WEEKLY. All figures indicate daily averages in barrels.)

STATE OR DISTRICT	PRODUCTION IN WEEK ENDED Dec. 28	Dec. 21
Alabama	1,150	1,150
Arkansas	74,300	74,000
California	889,700	876,000
Colorado	38,500	36,500
Florida	250	270
Illinois	199,500	201,900
Indiana	18,500	19,500
Kansas	278,200	275,650
Kentucky	30,150	29,900
Louisiana	403,825	403,825
North Louisiana	93,500	93,500
South Louisiana	310,325	310,325
Michigan	43,000	46,750
Mississippi	85,150	85,500
Missouri	100	100
Montana	23,500	23,550
Nebraska	700	700
New Mexico	103,000	103,000
New York	13,250	13,750
Ohio	8,200	8,500
Oklahoma	371,750	371,500
Pennsylvania	34,750	36,250
Tennessee	35	35
Texas	1,996,065	1,996,065
Tex. R. R. Comm. Districts:		
Dist. 1—S. Central	18,850	18,850
Dist. 2—Lower Gulf Coast	134,775	134,775
Dist. 3—Upper Gulf Coast	422,625	422,625
Dist. 4—S. West	208,800	208,800
Dist. 5—E. Central	34,615	34,615
Dist. 6—E. Texas Field	316,000	316,000
Dist. 6—Rest of N. East	99,375	99,375
Dist. 7-B—W. Central	34,500	34,500
Dist. 7-C—West	27,700	27,700
Dist. 8—West	499,725	499,725
Dist. 9—N. Central	118,000	118,000
Dist. 10—Panhandle	81,100	81,100
West Virginia	7,300	7,800
Wyoming	104,000	105,000
Total United States	4,725,875	4,717,195

Tidelands Case Scheduled With Further Delay Likely

The California tidelands case has been set by the Supreme Court for argument during the week of February 3, but there is a good chance it may not be heard for at least a month thereafter.

California authorities may ask for an extension of 30 days in which to prepare their case, and it is understood the Department of Justice would not object.

When the case is heard the court may take either of two courses. It may feel that there is sufficient agreement on the facts to pass upon the issue without further proceedings, or the court may find that the further investigation is necessary to settle differences between the two parties as to the facts, in which event a special master would be appointed to receive evidence and report to the court.

Ordinarily, in a case of this nature, a master is named almost immediately upon the consent of the court to take up the suit, but it was explained that in the tidelands matter the issue was made involved by the lengthy brief filed by California in answer to the government's petition and the court desires to hear some argument before it determines whether additional evidence is needed.

Stripper Subsidy Removed Except for Pennsylvania

Discontinuance of all stripper well subsidy payments except on Pennsylvania oil, effective as of December 1, has been ordered by the Office of Temporary Controls following the general increase in posted prices recently announced.

As of the same date, the premium payment on Pennsylvania grade crude was reduced "by the larger of 35 cents, or the amount by which the applicant's highest posted purchase price in effect on or after December 1, 1946, for the crude oil involved exceeds the OPA maximum price (exclusive of premium) applicable to such crude oil as of June 30, 1946."

It was explained that the action was in line with the directive issued August 28, by OES.

New Congress Likely to Inherit Task Of Reviewing U. S. Trade Agreements

The closing date for the filing of briefs on proposed reductions in import duties in the negotiation of a new reciprocal trade agreement with 18 countries found the Committee for Reciprocity Information last week snowed under, as a move was started to halt the negotiations until Congress could review the question.

A number of briefs came from various interests in the oil industry, not only opposing further cuts in the excise taxes on imported oil but pleading for their restoration to the full rate originally established by Congress in 1932.

From groups of smaller operators came a warning that a further cut in the levies would put a brake upon domestic operations and leave the country ill prepared to meet another emergency. Protection of full excise taxes, it was contended, is needed to keep out a flood of cheap foreign oil from the Middle East and South America any time the seven companies which dominate in those areas, five of them American, desire.

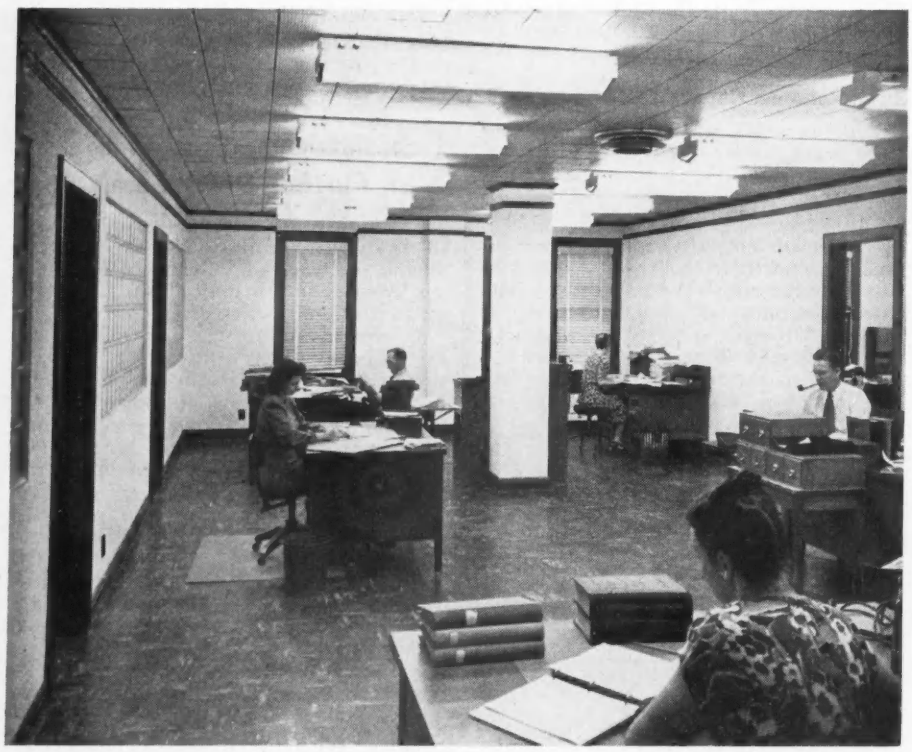
The Independent Petroleum Association of America argued that not only should the full taxes be restored but there should be established a quota system "restricting the amounts of imported oil so that such quantities will not disturb or depress the producing end of the domestic petroleum industry, and only such amount of oil should be imported into this country as is absolutely necessary to augment our domestic production when it is produced under conditions consonant with good conservation practices.

In some other quarters in the industry, however, there appeared to be a feeling that the threat of imported oil was not so serious as to necessitate a barring of the door and a belief that there was a place in the picture for foreign petroleum, which has been coming in at a rate of 9 to 12 million barrels a month since the end of the war. This position was implied by the absence of briefs, rather than in views filed with the committee, and several important organizations, among them the National Petroleum Association, neither filed briefs nor indicated a desire to be heard during the hearings which will open January 13.

Tariff and Congress

Meanwhile, a fight in the new Congress against further tariff cuts was presaged by a letter to the State Department from Senator Butler of Nebraska, urging postponement of the trade negotiations and charging the administration with making a "lame-duck" effort to continue a policy of very low tariffs.

Republican members expressed themselves as in accord with the objective of the law to expand foreign trade by advantageous concessions, but declared the issue is of such importance that the new Republican majority should have a chance to consider it.



—Photo by Paul Peters

View of *The Oil Weekly's* new general editorial office

THE editorial department of the Gulf Publishing Company has moved into its new quarters on the second floor of the main building and plant at 3301 Buffalo Drive, Houston.

The new offices, laid out and designed expressly for use of the editorial staffs of THE OIL WEEKLY and the *Petroleum Refiner*, have been under construction for a year. One of the delaying factors was the prolonged strike of Houston building trades workers last spring.

The quarters are air-conditioned, were given special acoustical treatment and flourescent lighting is used throughout.

The new construction covers a total of 8150 square feet. The general editorial office, pictured here, plus eight private offices for departmental heads of THE OIL WEEKLY and the *Petroleum Refiner*, account for 4259 square feet. A spacious library, covering 1086 square feet, has been provided for the editorial staff. Within this library is a wealth of material which staff writers refer to frequently in their research work. It is also available for public use.

The mailing room and special printing sales offices occupy the east wing and cover 2805 square feet of space in the new addition.

Special furniture for all the offices, including the general editorial office of THE OIL WEEKLY pictured here, has been on order for several months and when it arrives appearances will be greatly changed. Doors shown at the left in the picture lead into the separate offices of the managing editor, the foreign editor and the engineering editor. The door to the right leads into the library which, too, is not fully presentable because its stacks and other equipment, long on order, have not arrived.

Pneumatic tubes link the general offices of both THE OIL WEEKLY and the *Petroleum Refiner* with the composing room and plant on the first floor of the main building.

The original quarters of the editorial department have been remodeled and are being occupied by the advertising, circulation and business departments.

Oil Pioneers' Party

The annual Year-End Party of the Petroleum Production Pioneers of California, held in Los Angeles, was attended by more than 400 old-timers and guests.

Speakers on subjects pertaining to "the good old days" included Frank Hill, chairman of the Pioneers, Walter A. English, Denny Driscoll, W. L. McLaine and W. R. Guiberson. J. E. Gosline, president, presided. Arrangements for the party were handled by Lou Bronzon and Richard Sneddon.

Alaskan Contracts

The government has extended the contract for exploration of the Naval Petroleum Reserve No. 4 in Alaska for another year as contemplated when the contract was signed about a year ago.

Hoover, Curtice and Ruby, Inc., of New York, and C. F. Lytle Company and Green Construction Company, both of Des Moines, Iowa, are the contractors. The original award involved a contract price of $1 million.

Hull to Depart Soon for Study of Trans-Arabian Line Construction

Plans for constructing the $100 million big-inch crude oil trunk line from the oil fields of Saudi Arabia to a terminus on the eastern shore of the Mediterranean Sea by Trans-Arabian Pipe Line Company are taking shape with actual laying of the pipe expected to start in the summer or fall of 1948.

Burt E. Hull, president of Trans-Arabian, will leave New York on January 16 for a two months' visit in the Near East during which time he will study the needs for laying the line.

Subject to changes, the general plans call for about 1050 miles of combination 28- and 30-inch pipe, Hull said. However, final plans may call for 30-inch pipe only.

Using domestic labor, Hull said it would probably require from 12 to 18 months to complete the laying of the pipe. Six months will be required to school the domestic labor.

He said the actual laying of the line will be easier than laying the Big-Inch and Little Big-Inch carriers as the terrain in the Near East is almost ideal for such work. About two thirds of the pipe will be on top of the ground. Besides the initial pump station at the origin of the carrier, five booster stations will be installed, each about 175 miles apart.

The daily capacity of the line will be between 300,000 and 330,000 barrels. It will require 4,750,000 barrels of crude oil to fill the line, representing about one day's production in the United States, while about 7 million barrels of oil will be required by the complete system, including the pipe line and working stocks at both ends of the line.

Other officers of Trans-Arabian are W. S. S. Rodgers, chairman of board; H. D. Collier, vice chairman; C. E. Olmsted, James H. MacGaregill and Hubert H. Hall, vice presidents, and Joseph H. McDonald, secretary-treasurer.

Russia's Right to Pipe Made by A. O. Smith Denied

The Russian government has been denied the right to take over a contract which the United States Treasury held with A. O. Smith Corporation of Milwaukee, Wisconsin, for 183 miles of large diameter steel line pipe.

The decision, rendered in the U. S. District Court of Western Texas, ended litigation which started when charges were made that efforts of the Russians would interfere with the supply of natural gas to more than a million residents of Southern California.

The decision came as the result of a stipulation presented to the court by A. O. Smith and five other large domestic companies which set forth a plan for the allotment of Smith's pipe production that was satisfactory to the companies. In addition, A. O. Smith asked the court to rule on whether Russia had a legal right to step in. The court approved the stipulation, and ruled that Russia had no rights in the matter.

The stipulation further provided that any purchaser could procure pipe from A. O. Smith outside the agreed allotments if the purchaser could provide the steel, and if A. O. Smith's pipe mill were not operating at capacity.

Under the stipulation, the El Paso Natural Gas Company is to get 341 miles of its original order of 764 miles, and by procuring its own steel, it hopes to complete its Texas-California line by utilizing available capacity of the Smith mill.

Continental Will Build Pipe Line in North Texas

Continental Pipe Line Company has authorized the installation of a 7-mile 4-inch crude gatherings system in the Hildreth and North Stoneburg areas, Montague County sector of North Texas. To gather Continental Oil Company's controlled production that amounts to about 4000 barrels daily. The oil will be routed through Magnolia Pipe Line Company's trunk line in reaching The Texas Pipe Line Company's system on consignment to the Texas Company. The latter will supply an equivalent volume of sweet crude to Continental Oil Company's refinery at Lake Charles, La.

Trans-Continental Proposes Texas-East Seaboard Line

Trans - Continental Gas Pipe Line Company, Inc., last week asked FPC for authority to construct a 1380-mile 26-inch natural gas pipe line from Texas to the Eastern Seaboard at an over-all cost of $130 million.

The company was a bidder for the Big Inch pipe lines, offering $85 million cash, and on March 1, last, in advance of the formal bidding, sought an FPC certificate authorizing the operation of the two lines for natural gas. The latest application did not disclose whether the company now was out of the bidding for the government lines.

The company is a Texas corporation, specifically organized to purchase and transport gas from the Texas Gulf Coast area to the Eastern Seaboard through the Big Inch lines, with twelve stockholders, individual and corporate, declared well able to carry out their commitments. Claude A. Williams is president of the corporation, which has headquarters in Longview, Texas.

The FPC application showed that the proposed line would run from near Hemphill, in East Texas, to various delivery points in New York, New Jersey, Pennsylvania, Delaware and Maryland, where it already has negotiated for contracts for the sale of gas to a number of utility companies. The estimated cost of the main and distributing lines was set at $80,493,000, and another $28,240,000 would be expected on 14 compressor stations, $765,000 on dehydration plants and $794,000 on meter stations.

The company stated it has contracts for the purchase of 325 million cubic feet of gas per day, and with the project operating at a minimum average load factor of approximately 92 percent, figured its average daily sales at approximately 300 million cubic feet. Companies receiving the gas, it was said, would use it mainly for enrichment and reforming.

The application set forth that the project "is designed to fit into a comprehensive program for the conservation of natural gas produced with oil in the East Texas and Gulf Coast areas" and would take a considerable quantity of gas now being vented.

From the standpoint of national security, the company pointed out that "during war or other emergency the availability of natural gas will consequently reduce the danger of widespread dependence on oil and will serve to slow up the increasing dependence on oil resources."

Stressing the fact that no natural gas lines now serve Baltimore, Wilmington, Philadelphia, Newark or New York, the application declared the demand for natural gas in connection with manufactured gas operations in those areas far exceeds the capacity of the proposed line.

Big Inch Gas Allocated To Distributing Companies

A gas industry advisory committee has made its recommendations and the FPC has ordered allocation by Tennessee Gas and Transmission Company of the natural gas moved through the Big Inch pipe lines under its four-month lease from War Assets Administration, as follows:

For all deliveries of 100 million cubic feet or more, 20 million cubic feet shall be apportioned to Panhandle Eastern and 5 million to systems recommended by Tennessee, and of the balance, 50 percent shall go to Columbia Gas and Electric, 25 percent to Consolidated Natural Gas, ten percent to National Fuel Gas and 15 percent to Equitable Gas Company. Any gas not taken under the allocations is to be delivered to Columbia, and in the event total deliveries fall below 100 million cubic feet all allotments are to be reduced proportionately.

West Michigan Properties Are Sold to Consolidated

Michigan Consolidated Gas Company has purchased entire holdings, including gasoline plants, pipe lines and leases, of the West Michigan Consumers Company of Muskegon, a company organized in 1928 to supply natural gas to Muskegon industrial plants. The sale involved a reported $1½ million.

John W. Robinson, organizer and manager of the company, will become vice president of Michigan Consolidated in charge of casinghead gas.

West Michigan's largest single unit was in the Reed City oil field, where a casinghead plant was built in 1943 and a pipe line laid to Muskegon.

Big DIESEL-ELECTRIC BARGE DRILLING RIG

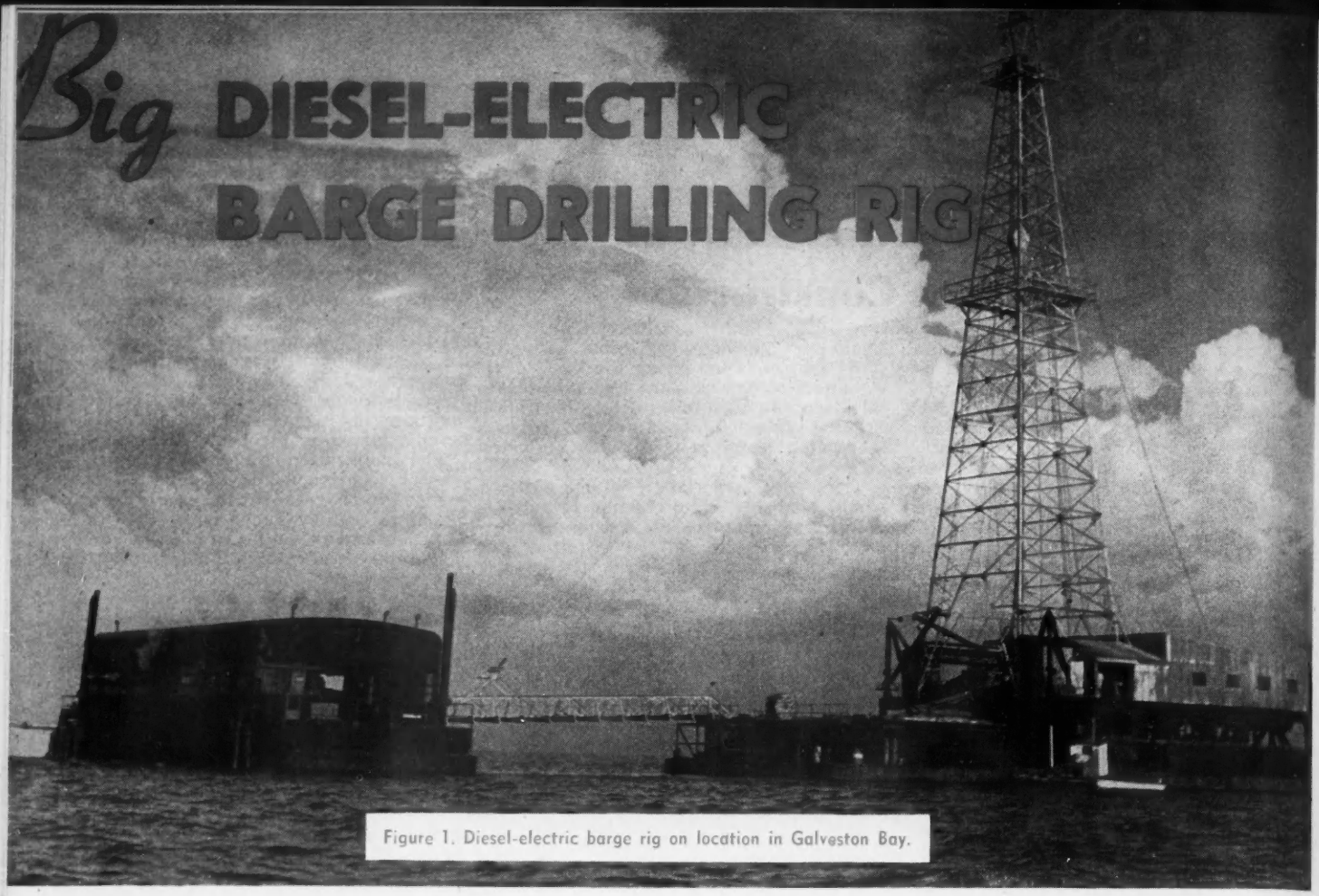


Figure 1. Diesel-electric barge rig on location in Galveston Bay.

By Humble Oil & Refining Company's Production Department

HUMBLE Oil & Refining Company has recently placed in operation its largest and most powerful barge drilling rig. It is a diesel-electric rig and the power available at the draw works is approximately 50 percent greater than that developed by a 14x14 steam engine operating with 350 pounds steam pressure. The rig was designed for routine drilling to 15,000 feet and features the latest developments in equipment and controls. Figure 1 shows the rig on location in Galveston Bay.

The power barge is 100 feet long by 30 feet wide with a 12-foot deep hull. The hull is divided into eight main compartments. Of the four outboard compartments, two on each side are used for submergence water. Three of the inside compartments serve for fresh water storage, the other for fuel oil. Four motor-driven vertical centrifugal-type pumps are used to pump out the submergence water when raising the barge.

The power plant consists of three 700-horsepower, 900-revolutions per minute, supercharged diesel engines, shown in Figure 2. Each engine is direct-connected to a 375-kw generator with a 60-kw, constant voltage generator mounted on top and driven by V-belts from the main generator shaft. The 60-kw generators are equipped with thyrite-controlled exciters so that the voltage generated remains constant though the engine speed may vary. Figure 3 shows the generators and a partial view of the prime mover. A closed cooling system consisting of a tube-type heat exchanger and a motor-driven raw-water pump is provided for each engine. The jacket water is circulated through the engine and heat exchanger by a pump built on the engine. The raw water is also pumped through a small heat exchanger for cooling the lubricating oil.

Electro-Hydraulic Governors

The engines operate at speeds from 450 rpm to 900 rpm, depending on the load demand. This is accomplished by use of electro-hydraulic governors which automatically adjust the engine speed as the load demand varies. This type of governor permits use of the lowest possible engine speed commensurate with the load demand, thus minimizing engine wear and fuel consumption.

The Ward-Leonard system of connecting the motors and generators is used in order to secure desirable speed control of the motors with minimum electrical losses. When using this system, the motor field is separately excited from the 60-kw, constant voltage generator and the armature is connected directly to the 375-kw generator armature. The speed and output of the motor can then be controlled by varying the field current of the generator. The excitation of the 375-kw generator could be controlled by means of a variable resistance in the field circuit; however, the magnitude of the field current would necessitate the use of a rather bulky controller and considerable electrical loss would result. In order to reduce the size of the control equipment and avoid excessive electrical losses, the generator field current is furnished by a specially designed motor-driven exciter which also furnishes current for the electro-hydraulic engine governor. Output of this exciter is controlled by means of a small variable resistance or rheostat in the field circuit. The field current required by the exciter is very small and, consequently, the electrical loss in the rheostat is negligible.

For normal drilling operations one generator is connected to the pump motor, one to the draw works motor, and one to the rotary motor. When hoisting the drill pipe, all three generators can be connected to the draw works motor. The mud-mixing pump, shale shaker, blower, and other auxiliaries are operated by energy furnished by the 60-kw, constant voltage generators.

Other Equipment

Other equipment mounted on the floor of the power barge includes the auxiliary switchboard (Figure 4), two motor-driven air compressors, a nine-kw diesel generator unit for lights when large engines are shut down, and a small boiler for heating purposes. A five-ton, hand-operated traveling crane is also provided for handling equipment on the power barge.

Beneath the floor on the deck of the barge are mounted the heat exchangers, raw-water pumps, oil tanks, air receivers, fresh-water pump (Figure 5), and the motor-driven exciters. Figure 6 shows a terminal box.

The drilling barge is of the twin-hull type and is 140 feet long and 54 feet wide, with 12-foot deep hulls. It differs from the conventional twin-hull design in that the individual barges are offset

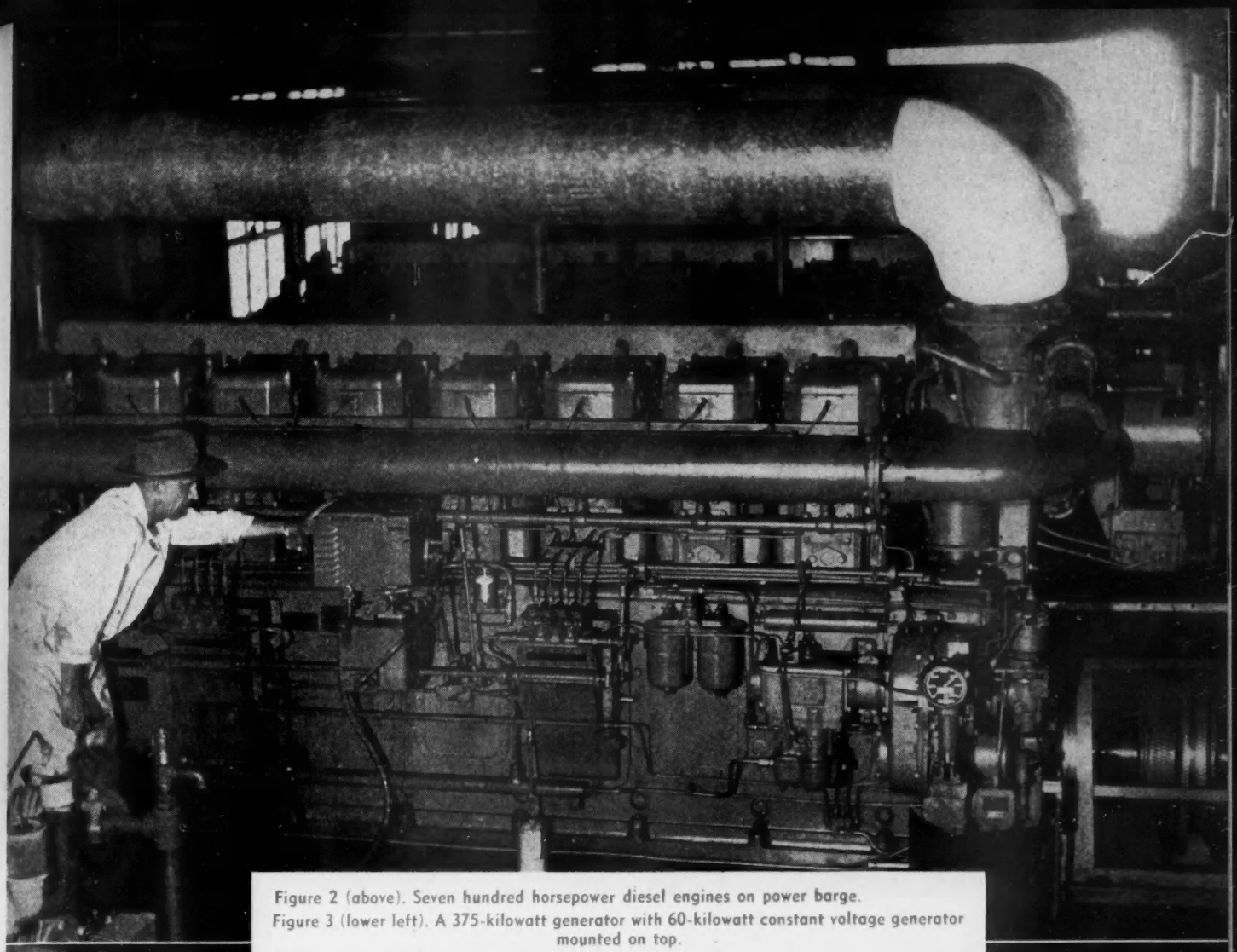
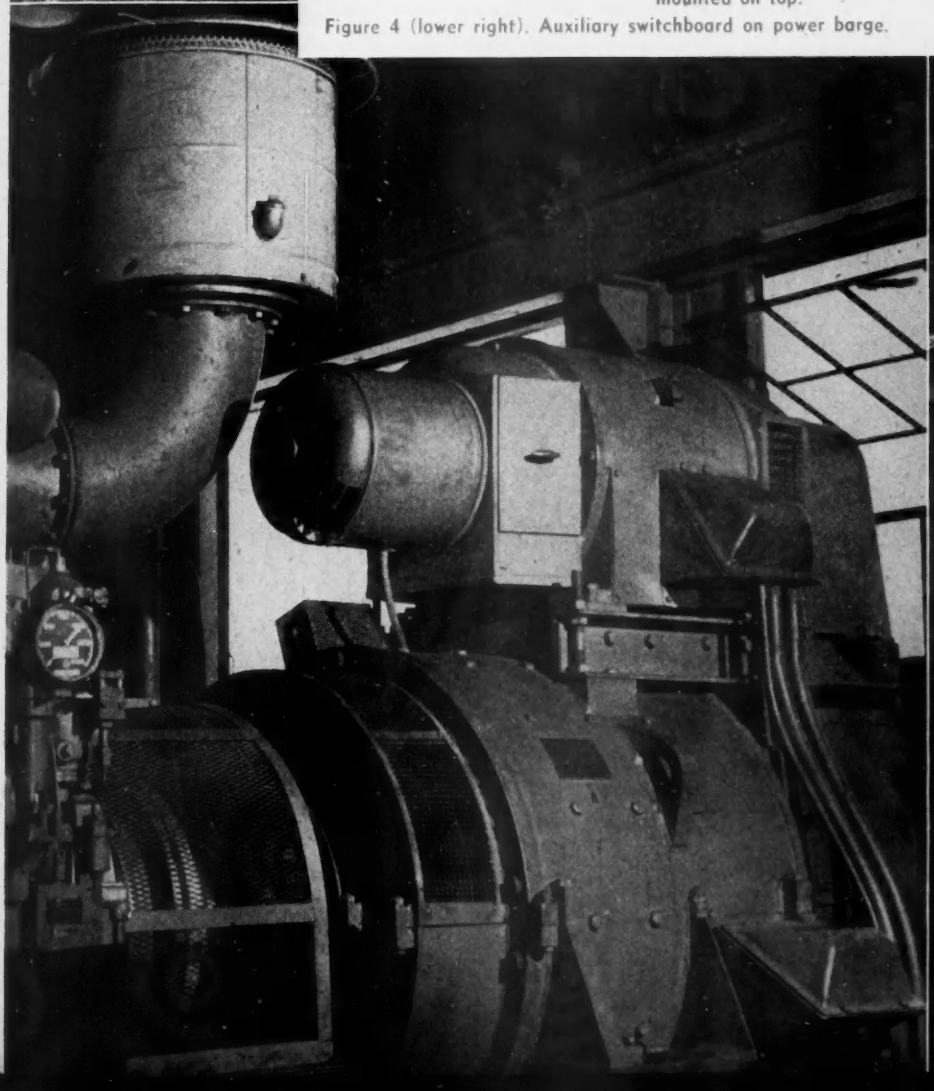
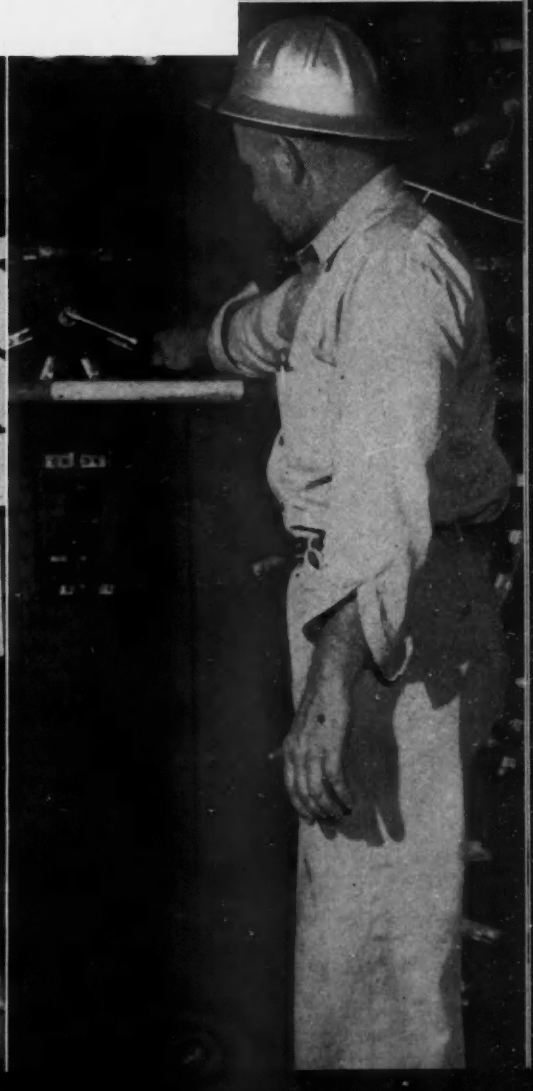
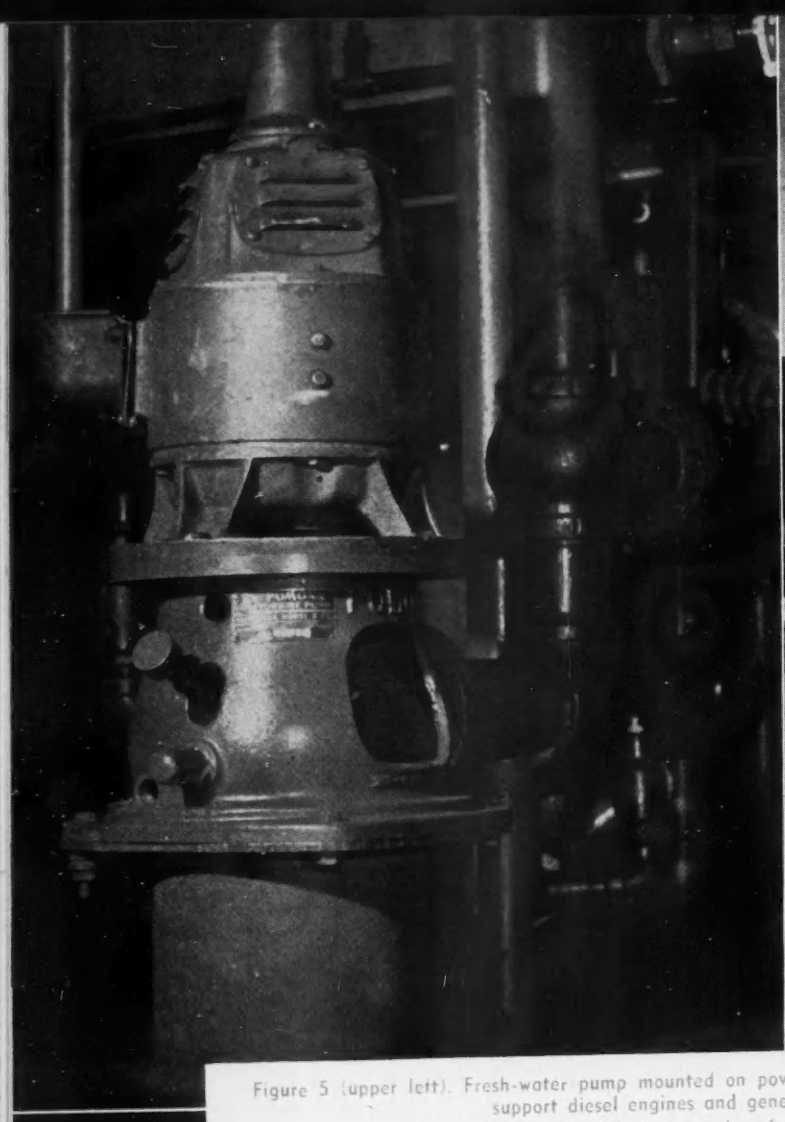


Figure 2 (above). Seven hundred horsepower diesel engines on power barge.
Figure 3 (lower left). A 375-kilowatt generator with 60-kilowatt constant voltage generator mounted on top.
Figure 4 (lower right). Auxiliary switchboard on power barge.







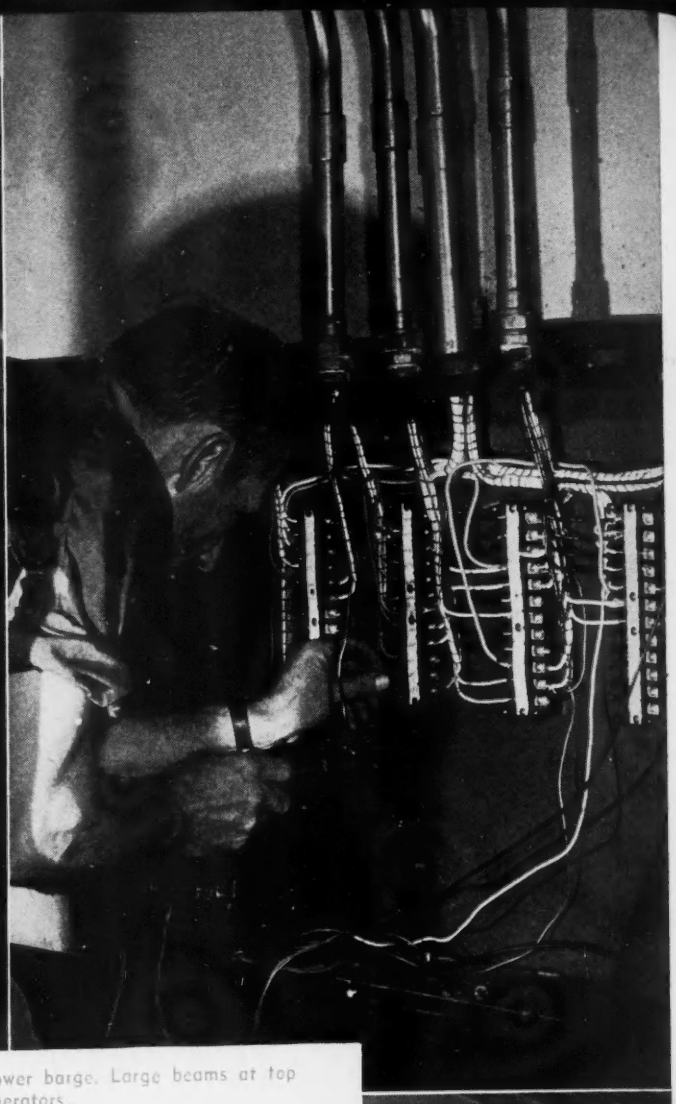
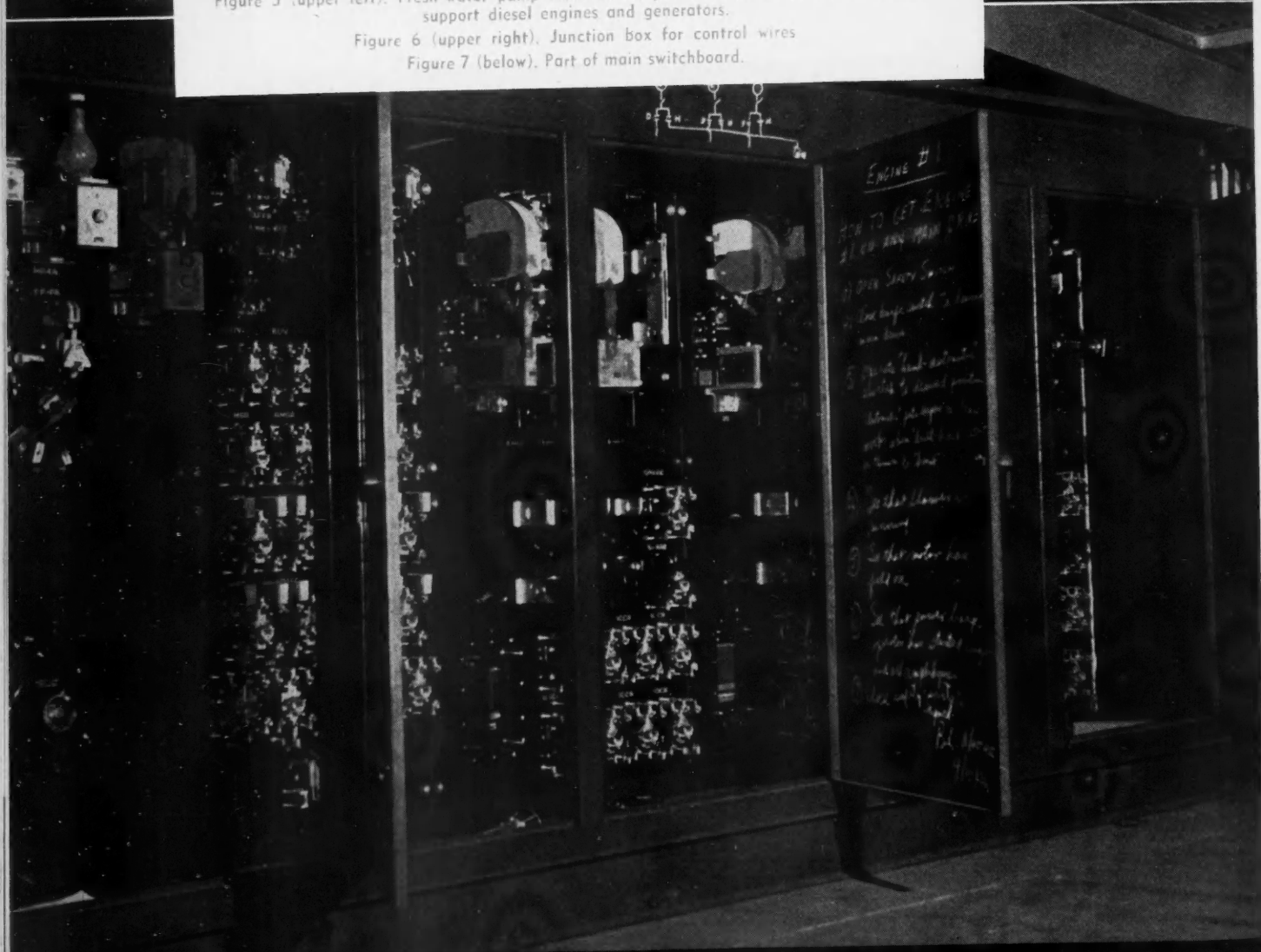


Figure 5 (upper left). Fresh-water pump mounted on power barge. Large beams at top support diesel engines and generators.

Figure 6 (upper right). Junction box for control wires.

Figure 7 (below). Part of main switchboard.



and the 6-foot slot extends 86 feet from the forward end rather than the entire length of the hulls. This design provides more usable space on the afterdecks of the hulls for the mud pumps and mud pump manifold piping. Each hull is divided into six main compartments and two collision compartments by means of a longitudinal bulkhead and four transverse bulkheads. All main compartments are used for submergence water except the two center compartments in the starboard hull which are used for fresh water storage. Six vertical centrifugal pumps driven by electric motors are used to pump out the submergence water when raising the barges off location.

The mud pumps are located on the afterdeck of the starboard barge with the active mud pits directly opposite on the port barge. Two 7¾x20-inch mud pumps, each driven by a 500-hp, mill-type motor, are used for drilling or circulating and a 5x8-inch pump with a 60-hp, motor is used for mixing mud.

Surge Chamber

The discharge and suction manifolds are arranged so that the large pumps may be compounded in series or parallel if necessary. Each of the large pumps is equipped with a precharged surge chamber designed by Humble. The surge chamber cushions the discharge surges characteristic of this type of pump and materially reduces vibration in the discharge manifold piping and whipping of the rotary drilling hose. The suction manifold is connected to all hull compartments in the barges as well as to the reserve mud tanks located on the forward deck of each barge. This arrangement permits any compartment to be emptied by use of the mud pumps in case one of the desubmergence pumps should break down.

A superstructure 14 feet high extends 82 feet from the after end of each hull and, in addition to supporting the derrick, draw works, and rotary, it provides a means of fastening the two hulls together. The tie members between the superstructure on each barge can be removed when it is necessary to separate the hulls for transportation through narrow locks or canals.

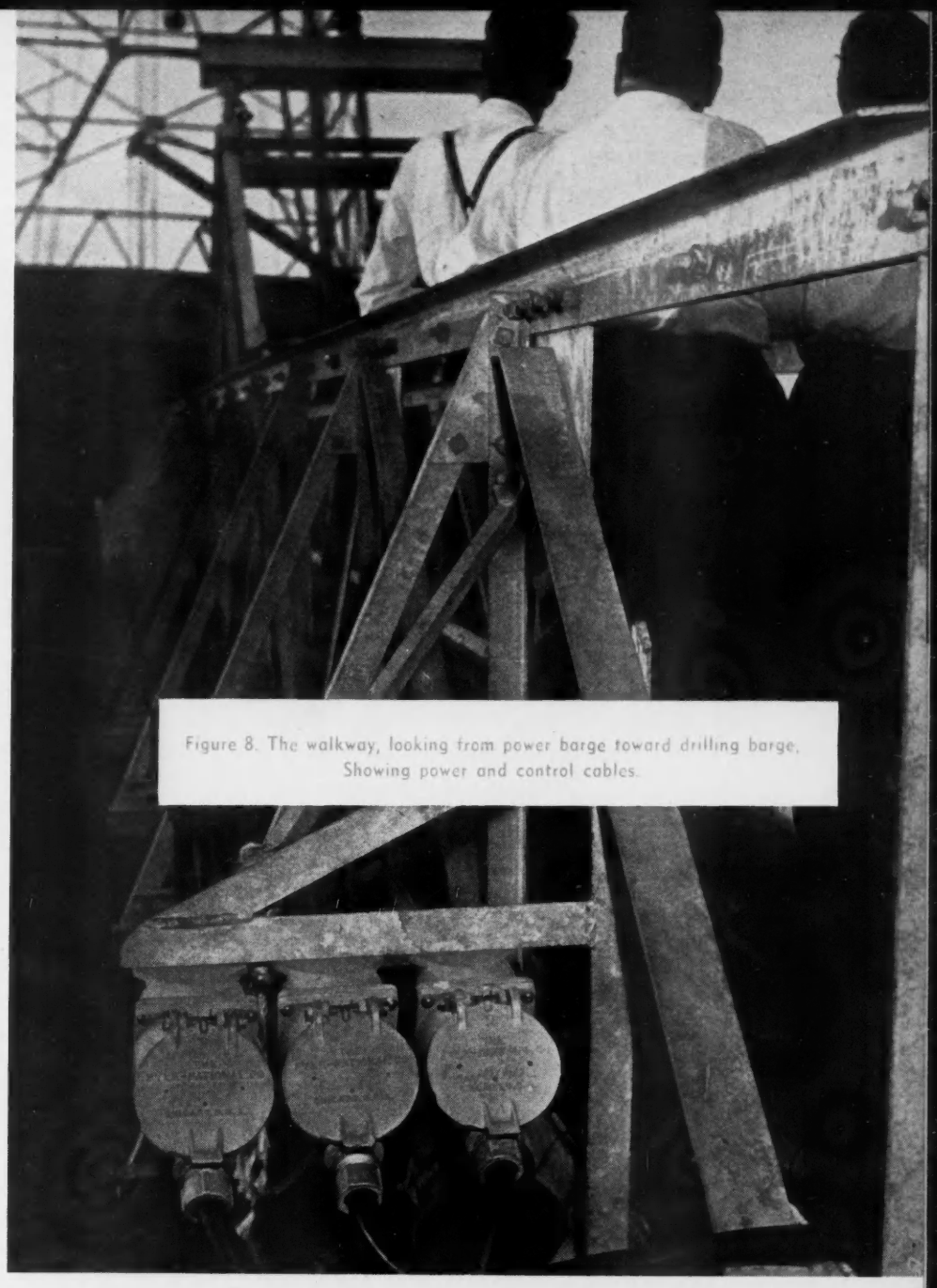


Figure 8. The walkway, looking from power barge toward drilling barge. Showing power and control cables.

Derrick Leveler

The derrick is mounted on the superstructure and is 136 feet high with a 30-foot base. It is of standard design except that provision is made for the use of hydraulic jacks and shims for leveling the derrick when the barges settle unevenly. A conventional four-speed draw works equipped with air brakes and driven by a mill-type electric motor is used. The draw works motor is rated at 1000-hp at 725 rpm for continuous duty; however, for intermittent duty such as hoisting drill pipe it will deliver approximately 1700 hp.

The rotary is independently driven by a 300-hp, mill-type motor direct-connected to the pinion shaft with a flexible coupling. One-half of the coupling is equipped with a sprocket so that a chain drive from the draw works can be used if necessary. The torque output of the rotary motor is directly proportional to the armature current and the speed is proportional to the amature voltage. An ammeter and voltmeter calibrated in pound-foot torque and revolutions per minute, respectively, are mounted in plain view of the driller.

A coring reel, driven by a 300-hp motor and capable of spooling 18,000 feet of ⅝-inch wire rope, is mounted on the derrick floor. A stiff-leg derrick or cargo hoist with a capacity of five tons is mounted on each corner of the superstructure next to the pipe rack and used for handling drill pipe, casing, and dry mud. Most of the loading and unloading is done from the port side of the drilling barge and the hoist on that side is operated by air motors. The starboard hoist is operated manually by means of hand winches.

Other Units

The blowout preventers are operated by a 4x1¾x4-inch duplex pump driven by air. The electric, motor-driven air compressor and duplex pump, together with the regulating equipment and discharge manifold, are assembled on skids as a unit. The rotary slips are of the latest-designed, air-operated type controlled by a valve conveniently located near the driller's position. Other equipment units, such as crown block, traveling block, and hook, are of the latest design and of a size suitable for drilling to 15,000 feet or deeper.

The motors driving the pumps, draw works, coring reel, and rotary are ventilated by air from a blower located on the after end of the superstructure. All other motors on the drilling barge are of the totally enclosed type.

That part of the superstructure not occupied by the derrick is covered by a house with a change room, tile bath, mud laboratory, and office on one side and a bunk room and dry mud storage room on the other. Equipment in the central part of the housed section includes the main electrical switchboard (Figure 7), a diesel electric auxiliary light plant, and the blower which furnishes air to the separtely cooled motors.

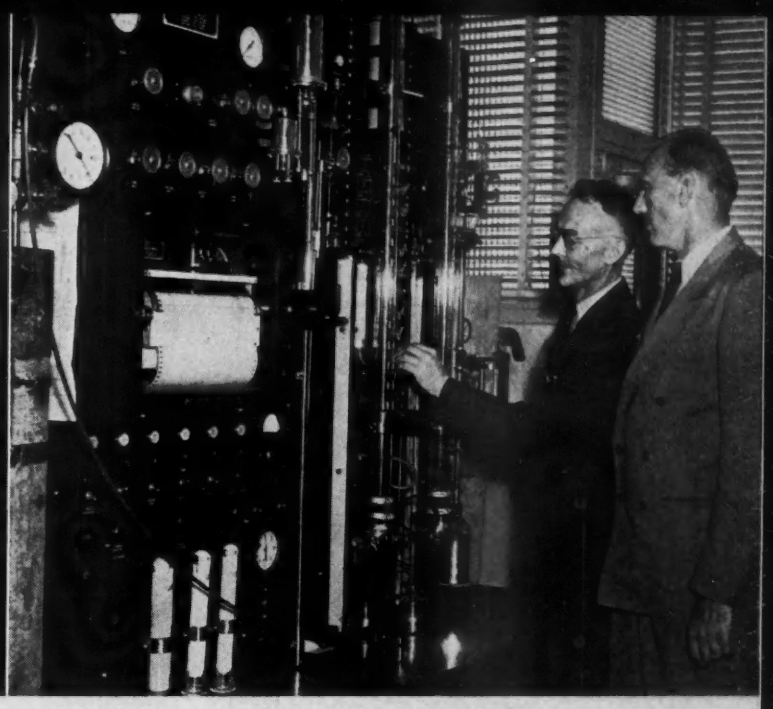
Pipe racks are located on top of the reserve mud tanks on the forward end of the barges and are of sufficient length to accommodate API range three casing. From the forward end of the pipe rack a hinged walkway extends 75 feet to the power barge. This walkway (Figure 8) provides a means of communication with the power barge and also supports all power and control cables.

Resolve: **to make 1947 an outstanding year of drilling operations. To help you achieve that goal is our aim, so feel free to call on us to assist with your mud problems. Our trained field personnel and modern laboratory are always at your disposal.**

MAGNET COVE BARIUM CORPORATION

HOUSTON, TEXAS **MALVERN, ARKANSAS**

John I. Gates, exploitation engineer in charge of core anlysis and chemical studies, mounts a portion of well core to be used in testing drilling mud for filter loss and plastering properties. Immersed in drilling mud and placed in the flanged pressure vessel, left, the sample is subjected to high temperatures and pressures. Studies of resulting filter loss and plastering will aid in developing more effective muds to be used in drilling the various types of formations.



Automatic recording, low temperature fractional distillation apparatus use for determining the composition of gases. The column beside the hand of W. E. Helmick, senior exploitation engineer, contains liquid nitrogen having a temperature of about —190° F. Gas injected in this column quickly condenses, the condensate then being heated slowly and the several components driven off to be separately measured. W. Templaar Lietz, right, senior exploitation engineer, has supervisory charge of laboratory activities.

Laboratory

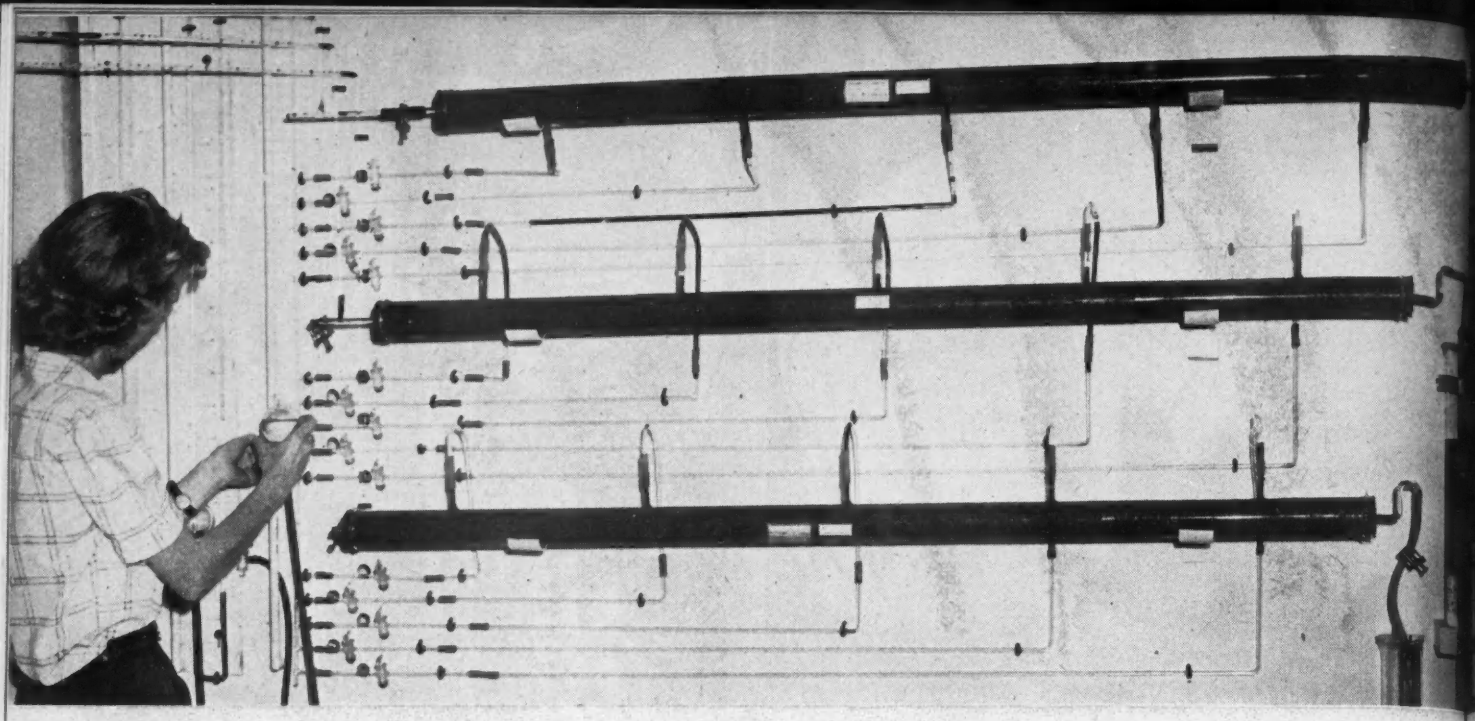
SIMULATES FORMATION CONDITION

By GILBERT M. WILSON
Staff Writer

PROBLEMS connected with core analysis, withdrawal rate investigations and channeling of gas between injection wells and producing wells are among those to be closely examined in the production laboratory recently opened in Los Angeles by Shell Oil Company.

Intended to provide an important link between the research groups at Emeryville, Calif., and Houston, and also between these laboratories and production men in the oil fields, this new laboratory has as its primary task the increasing of ultimate recovery rates. This is to be done not only by striving to improve existing drilling methods, but by at-

Samples of oil and gas taken directly from field separators are run through this thermo-dynamic analysis apparatus which simulates pressure-volume conditions in the reservoir. The mercury pump, left, forces the sample into a pressure-volume-temperature cell which is immersed in the constant temperature bath at right. Pressure then is released gradually, the volume of gas and oil being measured as the pressure is reduced to zero.



The effect of displacement rate on oil recovery efficiency is tested with the aid of the above horizontally-mounted glass tubes which are filled with sand. The sand is saturated with formation water, then oil is forced through to obtain as high a saturation as possible. A pump then forces formation water through the same tubes to displace the oil. Displaced oil and water are measured. By changing the rate of flow and studying resultant recoveries of fluid, much is learned about the behavior of fluids in the formation, leading to the improvement of recovery from the oil-bearing formation. Regularly-spaced manometer taps coming off the tubes measure pressure drop at successive points along the length of the tube.

tempting to improve production methods which will bring about the recovery of some of the crude that normally remains unrecoverable in the reservoir with present primary production techniques.

Occupying a large part of the street floor of the Shell Building, the laboratory, insofar as possible, will adapt to California operating conditions the recommendations and findings of the research groups at Emeryville and Houston. In charge of a staff of seven men and women, all of whom have had university training in chemistry and physics, are W. Tempelaar Lietz, senior exploitation engineer who has supervisory charge of the laboratory; Walter E. Helmick, senior exploitation engineer, who directs pressure, volume, temperature and thermodynamic investigations; and John I. Gates, exploitation engineer in charge of chemical studies and core analysis.

Indicating the close link between laboratory and field are the following representative types of problems that are to be studied, all work being pointed toward the improving of drilling and producing operations in order to increase the recovery of oil from subsurface formations.

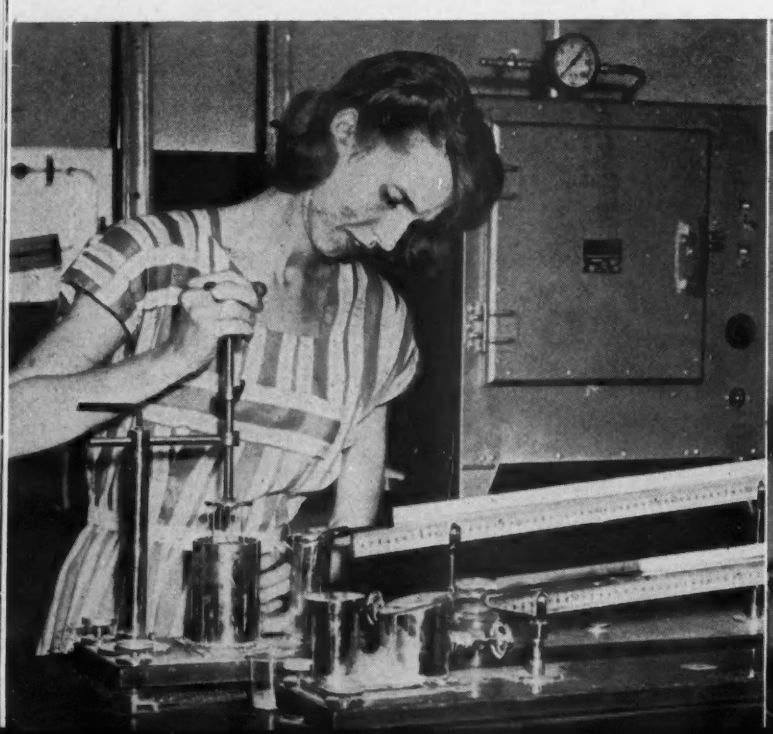
Actual drilling conditions are simulated in the laboratory in an effort to develop more effective muds for drilling in drilling wells are carefully analyzed for porosity and permeability and extent of oil or gas saturation, which in turn yields considerable information on the degree of productivity of a particular formation.

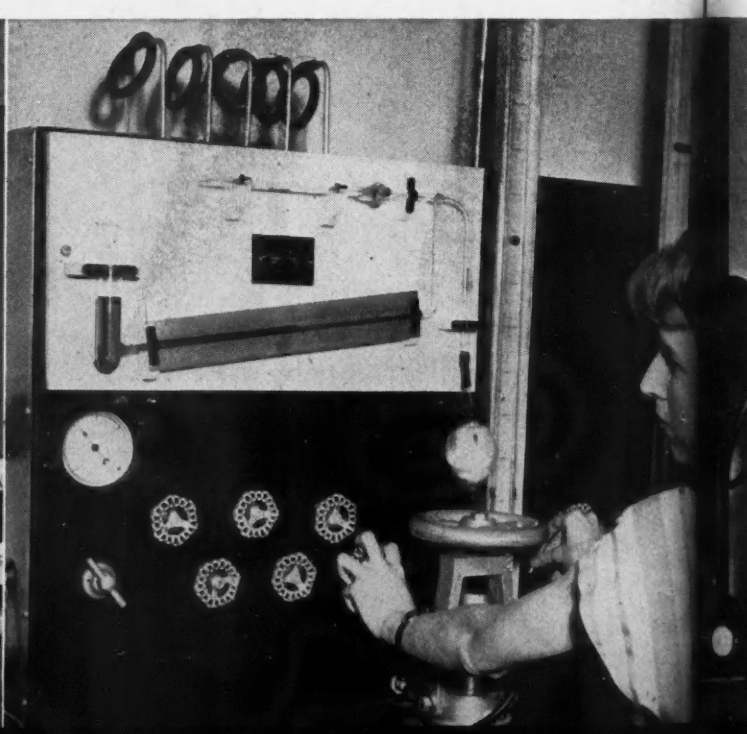
Laboratory studies dealing with electrical resistance of formations saturated with salt water, having a low resistivity, and those saturated with oil and gas, having a high resistivity, provide valuable information which later may aid in the proper interpretation and correlation of electric log recordings on other wells in a particular area.

Equipped with apparatus which can simulate water encroachment in a producing formation, one phase of the laboratory is able to show how edge water pushes oil ahead of it as oil is withdrawn

Bulk volume meters are employed to measure total volume of the core sample to be tested. Sample is forced into a container of mercury with the aid of a plunger. Displaced mercury forces indicator fluid from adjoining container and up into glass tube lying atop inclined meter stick. Determining total volume of core sample is necessary in the subsequent calculation of the porosity of the sand.

Sand permeability is tested with this device. A core sample, put inside a hollow rubber stopper and placed in the specially-devised pressure-tight clamp, is subjected to varying pressures to determine the rate of flow of air through the pores of the sample. By properly manipulating the valves on the panel, any pressure up to as high as 70 centimeters of mercury may be maintained.





In order to build special glass apparatus used in the tests, the laboratory operates its own glass-blowing equipment. Here an intricate piece of glass equipment is being blown for use in the laboratory.

Injection gas in some California fields is first mixed with mercaptans to act as tracers in determining existence and nature of channeling between wells in a given oil sand horizon. Gas samples from producing wells adjoining such an injection well are analyzed in this section of the laboratory. Laboratory staff member is opearting a gas meter to determine volume of gas being bubbled through caustic solutions.

from the reservoir. Experimentation of this type provides information leading to the determination of the most efficient rates of production in a given horizon.

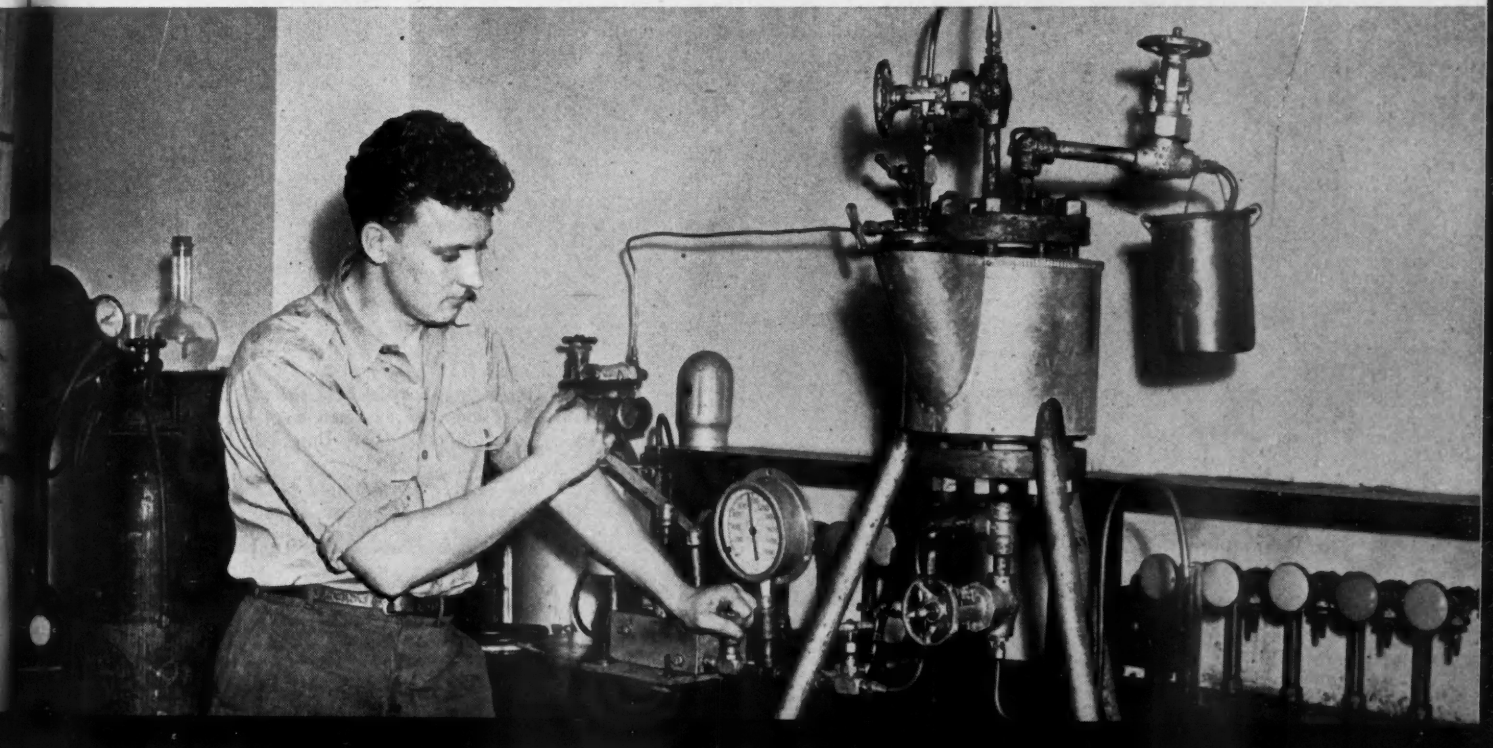
Proving or disproving the existence and nature of channels between injection wells and producing wells in a particular area is simplified by the work of one section of the laboratory. Gas injected into the formation is first mixed with mercaptans, and gas samples taken later from surrounding producing wells then are analyzed for the tracers to determine which wells have connecting underground channels.

The amount of oil remaining in a reservoir is more closely estimated with the aid of pressure-volume-temperature apparatus which closely duplicates the high temperatures and pressures existing in a reservoir. Samples of reservoir oil and gas used in these thermodynamic tests are obtained from traps in the field.

In order to keep the laboratory supplied with the many and varied types of specially-designed pieces of glass testing apparatus, glass-blowing equipment was installed and is operated by laboratory personnel. In addidtion, many of the special pressure vessels, fittings, and testing equipment used in the laboratory were made up by the company's Los Angeles division shops. Comfort and safety of staff personnel also were considered in the construction of the laboratory. Special ventilation and lighting were provided and an automatic gas detector was installed. The latter device automatically tests the air in a different room every 40 seconds and makes a complete round of the laboratory in two or three minutes. Should the amount of gas present reach even as much as 50 percent of a combustible mixture, a bell would sound an alarm.

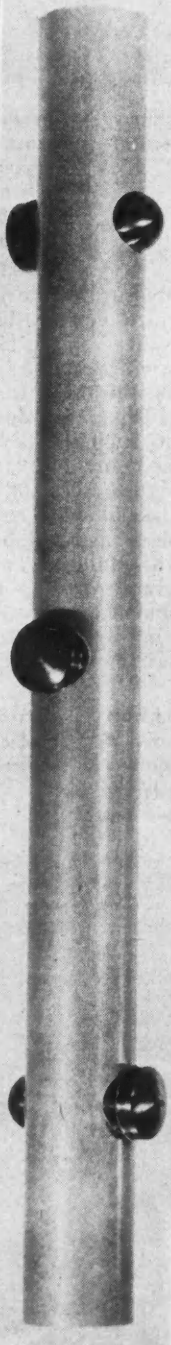
The accompanying photographs illustrate and describe in more detail the several principal operations and functions of the laboratory.

Effect of various types of liner perforations on the removal of mud from the face of a formation is determined with this apparatus. A layer of sand is placed in the mottom of the above pressure vessel, and drilling mud on top of it. The cell is subjected to high pressure, which leaves a mud cake on the sand surface. Small plates having perforations and slots duplicating those used in oil well liners then are placed atop the mud cake and oil pumped back through the sand from the bottom of the cell to determine the pressure required to break down the mud cake and push it through the slots.



Perforating Casing

With Shaped Explosive



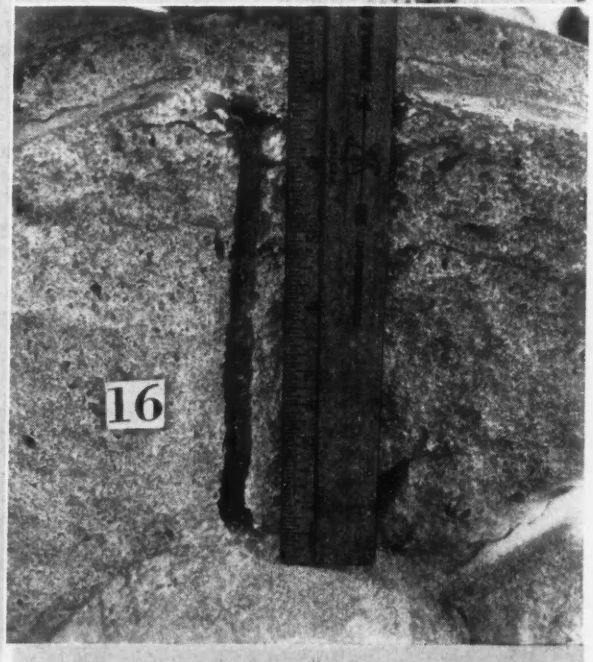


Figure 1 (top left). Typical test unit arrangement.

Figure 2 (lower left). Plastic container for normal and heavy-duty charges.

Figure 3 (center). Typical arrangement of multiple charges.

Figure 4 (top right). Lateral hole through concrete after penetrating casing and one-inch neat cement. Normal charge. Test Unit 1.

Figure 5 (lower right). Lateral hole through concrete after penetrating casing and 1¼ inches of neat cement. Heavy-duty charge. Test Unit 3.

Charges

By ROBERT H. McLEMORE
General Manager,
Well Explosives, Inc., Fort Worth

AS A RESULT of intensive research and development during the past few years, "shaped" high explosive charges* now can perforate the desired amount of oil well casing and its surrounding cement sheath!

Field tests during recent months show that depths of penetration through casing cement, and into the formation, which will satisfy critical operators, can be secured with small quantities of certain explosives when utilized in these newly developed shaped charges[1]. This depth of penetration can be obtained without detrimental effect on the pipe or cement.

The wartime role of shaped charges is now well known, particularly in the tank-piercing warhead of the "bazooka rocket" which proved so effective in the Battle of North Africa. The principle of "shaped" expolsive charges consists of leaving a cavity, or air space, in the explosive at the spot where the maximum force is desired. In the casing perforating charges, the explosive is placed in a pastic container, leaving a cavity in one end of the container. An air space is formed by the nose end of the container and the interior of a conical metal cavity liner, against which the explosive rests. The diameter, angle, thickness, and material of the liner all have a bearing on the size of the hole formed by the detonation, and on the total depth of penetration. By judicious variation of these factors, a hole of predetermined diameter can be obtained, together with the desired total depth of penetration. In the tests to be described, the average diameter of the entrance hole for the normal charge was ½-inch, for the heavy duty charge, ⅝-inch.

The hole is made by an extremely high-velocity metallic jet caused by the detonation of the explosive. This jet is emitted from the conical liner as it is progressively collapsed by the detonation wave of the explosive. Following behind the jet is the collapsed cone, referred to in practice as the "carrot."

A series of surface tests has been completed recently in which various sizes of casing were cemented in steel oil drums (Figure 1), in an effort to simulate casing conditions within the well bore. Table 1 contains the descriptions of the seven test units which were made.

Sizes of Charges

In the execution of the tests, two sizes of casing perforating charges were used:

* Patented and patents pending.

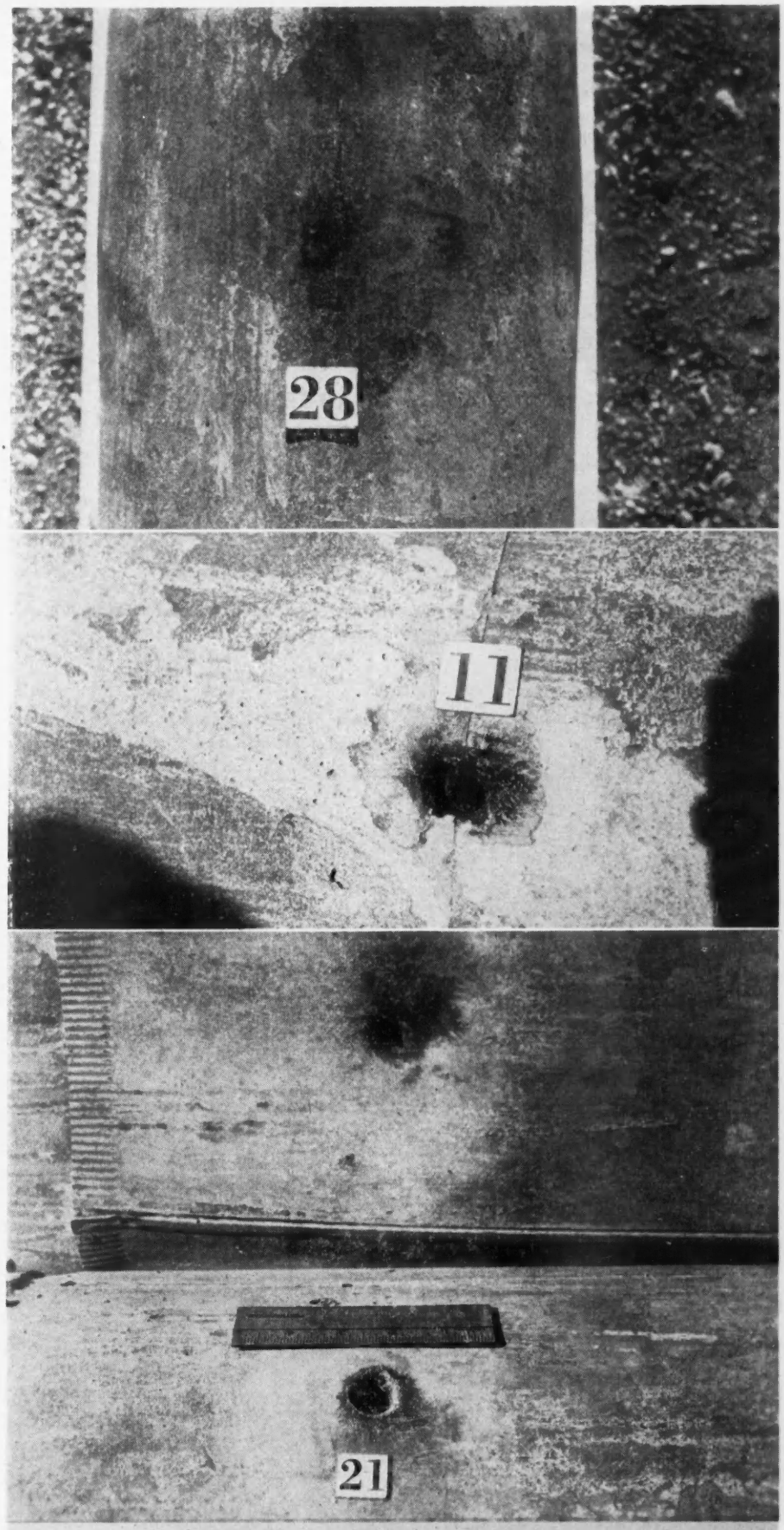
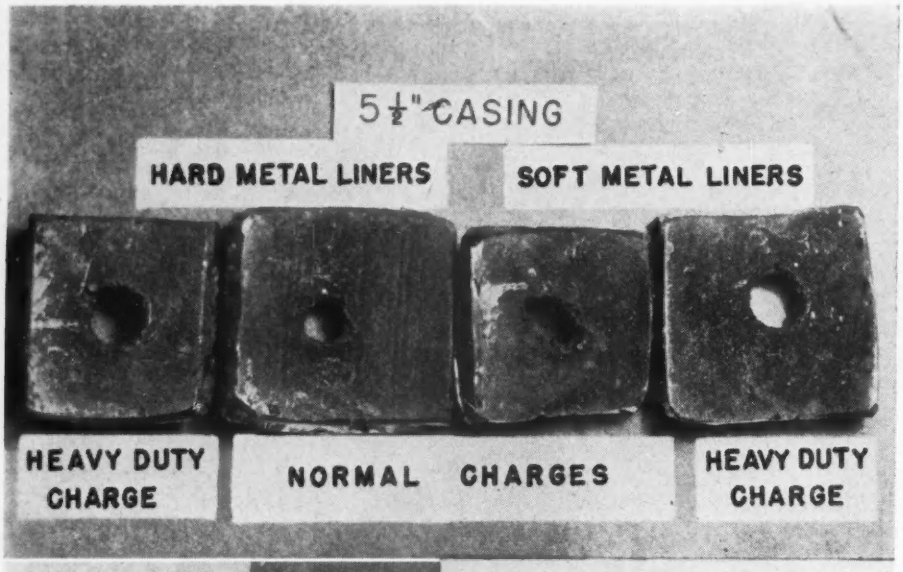


Figure 6 (top). Bulging and splitting of the casing from the "open hole" charge, containing eight times the explosive of the normal charge. No visibile damage was done to the casing by the normal charge.

Figure 7 (middle). Exit hole from neat cement caused by heavy-duty charge. Test Unit 1.

Figure 8 (bottom). Exit hole from neat cement caused by "open hole" charge. Test Unit 6.



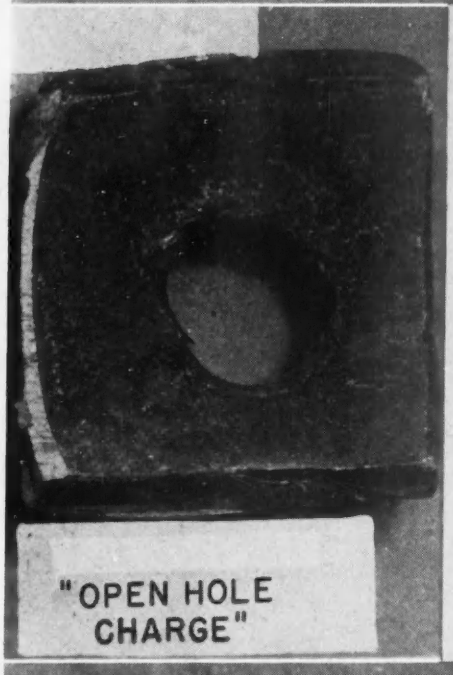


Figure 9 (above). Entrance holes into inner strings of casing from normal and heavy-duty charges.

Figure 10 (left). Entrance hole into inner string of casing from "open hole" charge. Test Unit 6.

Figure 11 (below). Entrance hole into sandstone outcrop from "open hole" charge. Fractures are outlined in heavy pencil. The hole is 14½ inches deep.

the normal casing perforating charge, designed to give deep penetration under normal conditions; and the heavy-duty charge, containing 2½ times the amount of explosive in the normal charge, designed to be used under particularly difficult conditions. Both the normal and heavy duty charge were in the same size container, shown in Figure 2. Both sizes were fired in all test units. For the purpose of determining the possible trouble to be encountered by the lodging of the "carrots" in the perforations, the charges were further varied by the use of hard metal cavity liners in some charges and soft metal liners in others. A typical multiple arrangement of shaped charges is shown in Figure 3.

In Table 2 is shown the depth of penetration secured with both the normal and heavy-duty charges, utilizing both the hard and soft metal liners.

The results indicate a better uniformity and possibly somewhat greater penetration when hard metal liners are used. However, this is believed to be due to the difference in manufacture of the two types of liners, the hard liners used in these tests being of much more uniform construction and wall thickness than the soft liners.

It was found that the soft metal liners, with only one exception, disintegrated completely while going through the cement, concrete, or sand. Due to this disintegration the perforations were clean and open, and there was no problem of perforation plugging by the "carrots." The carrots from the hard metal liners were found to lodge in the ground outside the drum. The hard metal carrots did not disintegrate completely while going through the concrete or sand.

The test units were cut open and the concrete, cement, and casing carefully examined to determine the effect of the shaped charge. In Figure 4 is shown the hole made through the concrete by a normal charge, after penetrating the casing and neat cement. In Figure 5 is shown the hole made through the concrete by a heavy-duty charge. The heavy-duty charge bulged 5½-inch pipe approximately 1/8-inch, but had no tendency to split or bulge 7-inch pipe. The normal charges caused no bulging or splitting of the pipe in any of the units. As an example of the bulging or splitting to be expected under extreme conditions, an open hole charge, not designed for use in casing and containing eight times the amount of explosive in the normal charge, was fired into one of the test units. Figure 6 indicates the splitting and bulging as a result of the firing of this charge, which of course would be considered incidental to the extreme depth of penetration desired.

No Fracturing

Due to its extremely high velocity, the metallic jet penetrates the casing and the surrounding neat cement with no apparent fracturing. In Figure 7 is shown the clean 5/8-inch hole through the neat cement made by a heavy duty charge. Again, as an extreme example, the exit hole from the neat cement caused by the big open hole charge is shown in Figure 8. There is no evidence of fracturing, though the hole through the neat cement from this heavy "open-hole" charge is approximately one inch in diameter.

The neat cement in these test units had set for 29 days and had a tensile strength of 515 pounds per square inch. The concrete had set for 33 days and had

a tensile strength of 430 pounds per square inch.

In an effort to illustrate the burr characteristics to be expected from shaped explosive charges, the entrance holes into the pipe made by the firing of the various charges are shown in Figure 9. Most of the charges leave some burr on the inside of the pipe, though in no case does this burr protrude more than 1/16-inch into the pipe. Again, as an extreme example, the entrance hole and burr caused by the heavy open-hole charges is shown in Figure 10.

Test Unit 7, as described in Table 1, was a pressure test device, consisting of 5½-inch, 7-inch, and 9⅝-inch casing cemented together, with provision made for sealing the 5½-inch pipe. The charges were placed in the 5½-inch casing, which was then filled with oil and pumped up to 1200 pounds per square inch. Three charges were initiated simultaneously, two of these being heavy-duty charges and one normal charge. The normal charge and one of the heavy-duty charges penetrated all three strings of casing. The container of the other heavy-duty charge apparently leaked, as a low order detonation was secured, with poor penetration. Though the firing of the charges blew off the sealed ends of the 5½-inch casing, there was no splitting of the 5½-inch or the 7-inch casing. There was a slight bulge in the 5½-inch casing at the spot where the heavy duty charge penetrated, and a slighter bulge in the 7-inch casing, but no bulging at the normal charge position, or at the defective heavy duty charge position. The outer string of 9 5/8-inch casing, not being backed up, split for a distance of approximately two feet.

Open-Hole Charges

In connection with the above tests, a short series of open-hole charges were fired. One of these was fired into a hard sandstone outcrop, through a ½-inch steel plate to preserve the face of the sand. After penetration of the ½-inch steel plate, a hole was made 14½ inches into the sandstone. In Figure 11 is shown the entrance hole, the fractures created being outlined in heavy pencil. Another charge was fired into an extremely hard limestone outcrop.

Shown in Figure 12 is the entrance hole into the formation made by the charge which penetrated a distance of 7¼ inches, with the resulting fractures outlined. The soft metal carrot was lodged alongside the limestone hole, 2¾ inches from the face of the outcrop. The soft metal carrot from the shot in the sandstone formation completely disintegrated. A third open-hole charge was fired into Test Unit 6 as an extreme example of splitting, bulging, fracturing, and penetration to be expected from shaped explosive charges. The splitting and bulging are shown in Figure 6. The exit hole from the neat cement is shown in Figure 8. The path through 4⅛ inches of concrete is shown in Figure 13. The exit hole from the concrete is shown in Figure 14. In addition to penetrating the test unit, the jet went through a ½-inch steel plate which was placed below the test unit, and 14 inches into the ground.

The above described tests, while made on the surface under simulated conditions, indicate that great penetration can be secured from the shaped charge method of casing perforation. It is evident that this can be done with no detrimental effect on the casing, and without

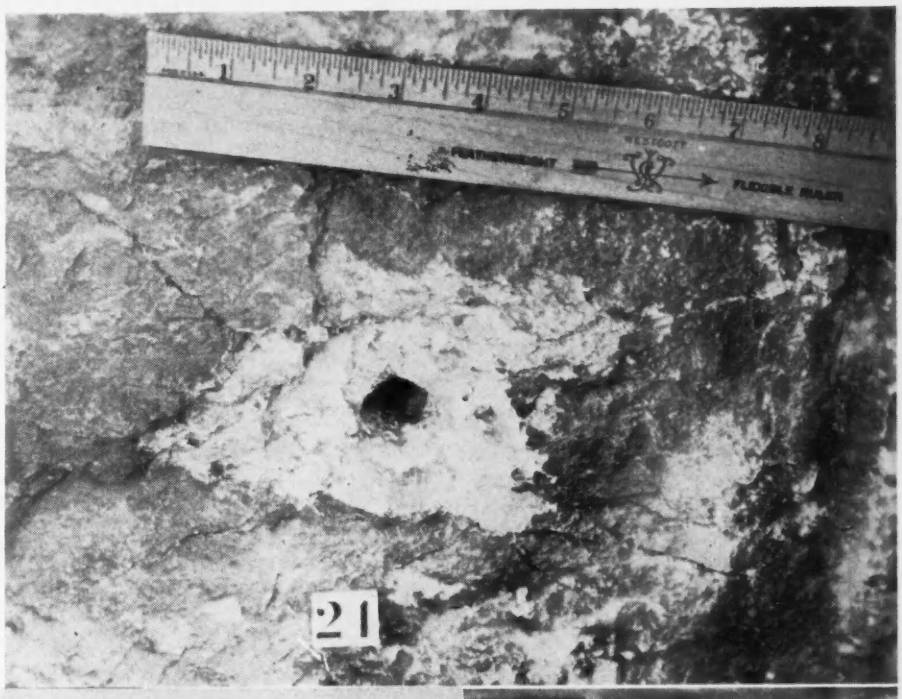


Figure 12 (above). Entrance hole into limestone outcrop from "open hole" charge. Fractures are outlined in heavy pencil. The hole is 7¼ inches deep.

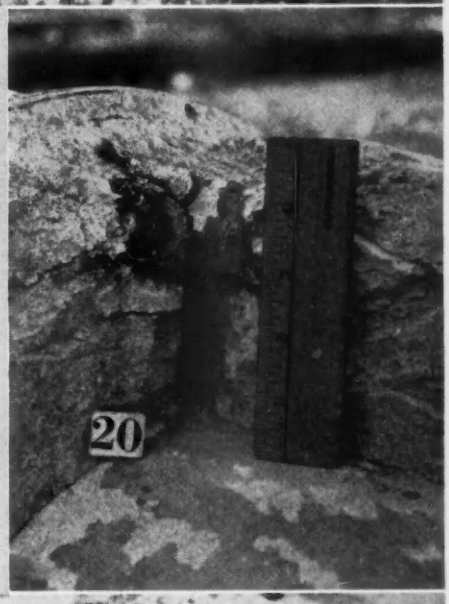
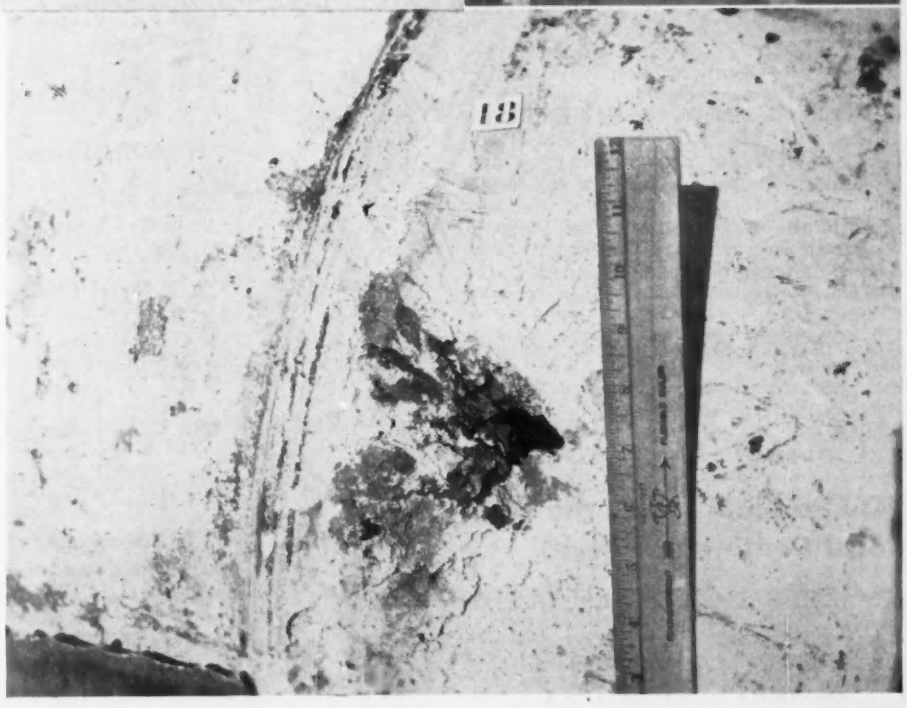


Figure 13 (right). Lateral hole through concrete after penetrating two strings of casing and three inches of neat cement. "Open hole" charge. Test Unit 6.

Figure 14 (below). Exit hole from concrete from "open hole" charge. Test Unit 6.



causing an excessive burr. The results also indicate that great depths of penetration can be secured by use of normal casing perforating charges, with no damage to the casing or neat cement. The process has the additional advantage of offering oil operators a means of getting any desired depth of penetration at the expense of correspondingly greater effect on the pipe.

Also, it can be concluded that the problem of having steel particles in the hole or pipe which interfere with the running of packers can be overcome by the use of the disintegrating soft metal liners.

Plans are being completed for the actual testing of the perforation process in a well from which the perforated pipe can be withdrawn. The well will be filled with fluid, and a section of two concentric cemented joints of casing will be lowered on a wire line. The charges will be placed inside these joints of casing and detonated at the bottom of the well. After perforating, the pipe will be withdrawn and examined for effects that might differ from those observed in the surface tests.

Double-Ended Charge

Since the execution of the above described tests, a double-ended charge has been designed and has proved successful. This charge, with no additional explosive, emits jets from both ends as it is detonated from its mid-point. In addition to doubling the number of holes in the pipe with any given number of charges, this design enables a greater percentage of the energy to be utilized in penetrating the pipe, with correspondingly less amount of extraneous energy available for detrimental effect on the pipe. Further experimental work is also being conducted using liners of various shapes and materials, with the end in view of giving a wider range of hole characteristics. The problem of operation in high temperature wells is well along toward final solution, as a result of development work now being conducted on the casing perforation process. Further experimental work is being conducted in active oil wells under varying conditions, and this work is being expanded to a semi-commercial basis as rapidly as the present equipment shortages permit.

The developers of the shaped charge process are deeply appreciative of the interest and constructive criticism extended by the many engineers and executives of oil-producing companies. It is believed that the process is now approaching the final stages of field development, and that it will soon be offered to the oil industry for widespread use, both in casing perforating and in open hole formation penetration.

REFERENCES

[1]"Formation Penetrating with Shaped Explosive Charges," page 56, THE OIL WEEKLY, July 8, 1946.

Coming Next Week

"Oil Possibilities on the Gulf Coast Continental Shelf"

By JAMES S. CRITZ, Staff Writer

Don't Miss It!

TABLE 1

Description of Test Units

Test Unit—No. 1: 7" 28# N-80 Casing in 9" sheetmetal form with neat cement in the annular space between the casing and the form, and concrete in the space between the sheet metal form and the 22" diameter oil drum.

Test Unit—No. 2: 5½" 17# J-55 casing in 8" sheet metal form with neat cement in annular space, and river sand in the space between the sheet metal form and the 22" diameter oil drum.

Test Unit—No. 3: 5½" 17# J-55 casing in 8" sheet metal form with neat cement in the annular space, and concrete in the annular space between the sheet metal form and the oil drum.

Test Unit—No. 4: 7" 28# N-80 casing in a 9" sheet metal form with neat cement in the annular space, and river sand in the annular space between the sheet metal form and the oil drum.

Test Unit—No. 5: 5½" 17# J-55 casing inside 8⅝" 40# N-80 casing inside an 11" sheet metal form with neat cement in the annular spaces between the casing and the sheet metal form, and concrete in the annular space between the sheet metal form and the oil drum.

Test Unit—No. 6: 7" 28# N-80 casing inside 10¾" 40.5# N-80 casing inside a 12¾" sheet metal form, with neat cement in the annular spaces between the casing and the sheet metal form, and concrete in the annular space between the sheet metal form and the oil drum.

Test Unit—No. 7: A pressure unit, consisting of 5½", 17# J-55 casing inside 7" 28# N-80 casing, inside 9⅝" 55# N-80 casing, with neat cement in the annular spaces. Provision was made to seal the 5½" casing so that it could be pumped up to 1200 PSI pressure after the charges were placed inside.

NOTE: Neat Cement in the above test units had been set up 29 days and had a tensile strength of 515 PSI. Concrete in the above test units had been set up 33 days and had a tensile strength of 430 PSI.

TABLE 2

Depth of Penetration Chart

Charge No.	Test Unit #	
		Hard Metal Liners—Normal Charge
1	1	7" 28# N-80 Casing; 1" Neat Cement; 4" Concrete.
2	1	7" 28# N-80 Casing; 1" Neat Cement; 6.5" Concrete.*
3	4	7" 28# N-80 Casing; 1" Neat Cement; 6.5" River Sand.*
4	4	7" 28# N-80 Casing; 1" Neat Cement; Indeterminant depth in River Sand.†
5	5	5½" 17# J-55 Casing; 8⅝" 40# N-80 Casing; 3.11" Neat Cement; 3.625" Concrete.
6	5	5½" 17# J-55 Casing; 8⅝" 40# N-80 Casing; 3.11" Neat Cement; 5.5" Concrete.
7	6	7" 28# N-80 Casing; 10¾" 40.5# N-80 Casing; 3.02" Neat Cement; 2.5" Concrete.
8	7	5½" 17# J-55 Casing; 7" 28# N-80 Casing; 9⅝" 55# N-80 Casing; 1.14" Neat Cement.*
		Soft Metal Liners—Normal Charge
1	2	5½" 17# J-55 Casing; 1.25" Neat Cement; 7" River Sand.
2	2	5½" 17# J-55 Casing; 1.25" Neat Cement; Indeterminant depth in River Sand.†
3	2	5½" 17# J-55 Casing; 1.25" Neat Cement; Indeterminant depth in River Sand.†
4	3	5½" 17# J-55 Casing; 1.25" Neat Cement; 4.125" Concrete.
5	3	5½" 17# J-55 Casing; 1.25" Neat Cement; 5" Concrete.
6	3	5½" 17# J-55 Casing; 1.25" Neat Cement; 4.2" Concrete.
		Hard Metal Liners—Heavy Duty Charge
1	2	5½" 17# J-55 Casing; 1.25" Neat Cement; 7" River Sand.*
2	3	5½" 17# J-55 Casing; 1.25" Neat Cement; 7" Concrete.*
3	6	7" 28# N-80 Casing; 10¾" 40.5# N-80 Casing; 3.02" Neat Cement; 4⅛" Concrete.*
		Soft Metal Liners—Heavy Duty Charge
1	1	7" 28# N-80 Casing; 1" Neat Cement; 6.5" Concrete.*
2	4	7" 28# N-80 Casing; 1" Neat Cement; 6.5" River Sand.*
3	4	7" 28# N-80 Casing; 1" Neat Cement; 6.5" River Sand.*
4	5	5½" 17# J-55 Casing; 8⅝" 40# N-80 Casing; 3.11" Neat Cement; 5.5" Concrete.*
5	5	5½" 17# J-55 Casing; 1.13" Neat Cement.
7	7	5½" 17# J-55 Casing; 7" 28# N-80 Casing; 9⅝" 55# N-80 Casing; 1.14" Neat Cement.*
8	7	5½" 17# J-55 Casing; 7" 28# N-80 Casing; 1.15" Neat Cement.
		Soft Metal Liners—Open Hole Charge
1		7¼" Limestone formation outcrop.
2		½" steel plate; 14½" hard sandstone formation outcrop.
3	6	7" 28# N-80 Casing; 10¾" 40.5# N-80 Casing; 3.02" Neat Cement; 4⅛" concrete; ½" steel plate; 14" into ground.

* Indicates complete penetration of testing unit. Further penetration indeterminant.
† Hole in unconsolidated River Sand closes after passage of jet.

PRINCIPLE USES OF

Fluorologs

By ORTON E. CAMPBELL
Fluorographic Exploration Company, Houston

AN ACCURATE well log is as important as an accurate interpretation of the structural conditions upon which a bore hole is predicated. It is a well known fact that many oil fields have remained undiscovered because of inaccuracy in logs which were kept by the early drillers. Logging techniques, like other methods in the oil industry, have been refined and improved and today there is no reason why accurate logs cannot be obtained consistently.

During the past two years the industry has had at its command a logging method which renders a peculiar and important service. Based on the principle that the rocks overlying an oil accumulation are characterized by anomalously high fluorescent intensity, this new technique, known as "fluorologging" and using well samples, develops "fluorolog" patterns which, from the first 2000 feet of a drill hole, indicate the presence or absence of a deeper accumulation.

In general terms, fluorologs are designed to detect and measure the effect of an accumulation of petroleum on the fluorescent property of the overlying, underlying and contiguous rocks; and to detect the presence and determine the amount of free oil and/or gas in the drill cuttings and core samples recovered from a bore hole.

Specifically, fluorologs are designed to anticipate the presence or absence of a commercial accumulation of petroleum thousands of feet ahead of the drill bit; to detect the presence or absence of a commercial accumulation of petroleum laterally and locally distant from a drill hole; to detect, locate and evaluate oil and/or gas shows in a drill hole, and to identify geological strata for purposes of correlation.

One of the principal uses of fluorologs is to answer the question: "How deep must a well be drilled?"

At the present time a number of wells are drilled to 15,000 feet or even deeper. Production has been encountered at depths of 13,700 feet and it is believed that production will be found at even greater depths. The cost of drilling these deep wells is so great that every precaution is justified to insure their proper location. It is equally important to be able to determine whether a well be carried to a great depth and it is in this realm of conjecture that fluorologs claim to have the answer. Developers of the technique believe that only those wells which show a favorable fluorescent intensity should be carried on down, while those that do not should be abandoned long before great depth is attained, thus saving the industry millions of dollars in tests which, interpreted by the fluorolog, have no chance of producing.

On the other side of the picture the history of the oil industry is replete with instances of wells being abandoned before reaching a reservoir that was later discovered by deeper drilling. Many unfortunate and premature abandonments of this kind may be avoided by the use of fluorologs.

Anticipating Probable Pay

It has been mentioned that a geologic section overlying an oil accumulation will show a considerably higher average fluorescent intensity than a geologic section penetrated in barren territory. This fact, when fully realized by geologists and oil operators, is due to bring about several revolutionary changes in present methods of exploratory drilling. The most significant fact in regard to the higher fluorescent intensity of the rocks overlying an oil reservoir is that it generally begins at or near the surface and continues downward to the horizon of accumulation.

In all wells which were completed as producers on which fluorologs have been compiled, the Fixed Progressive Average curve either started at the surface with a minimum value of .25 ferg[1] or reached a minimum value of .25 ferg within the first 2000 feet, and maintained an average value of .25 ferg or more downward to the producing horizon. In other words, a drill hole which is due to be completed as a producer develops a characteristic pattern at a shallow depth which enables the operator to anticipate the probability of production.

It is obvious that data which enables an operator to anticipate the presence of a commercial pay in a bore hole, even if it is thousands of feet below the level of the drill bit, furnishes valuable information not heretofore available by other well logging methods. The practical operator and geologist upon becoming convinced that high fluorescent intensity in a bore hole section reveals the presence of production at a greater depth, will turn his attention to the matter of putting such information to the best uses.

Industry now has at is command a new technique, known as fluorologging which renders a unique and important service.

A fluorolog is a set of curves drawn by plotting the fluorescent intensities of well samples against their depth. Cuttings samples are sufficient for the compilation of fluorologs, but it is very desirable to include all conventional and sidewall core samples available. Fluorologs are compiled from data obtained by measuring a physical property of the earth, and since the property measured—fluorescence—is significant to the presence of oil and/or gas, fluoranalysis is a scientific method of petroleum exploration.

Compiling Fluorologs

The data used in compiling fluorologs are obtained by fluoranalysis which is an improvement on the examination of well samples visually for the presence of oil shows under an ultra-violet light. The essential improvements afforded by fluoranalysis are permanent records of the fluorescent intensities of samples and a quantitative measurement of the total fluorescence.

The light-box method is qualitative, subject to errors of perception by the observer, records only fluorescence occurring within the visual range, and its sensitivity is limited. In fluoranalysis the data obtained is quantitative, recording and measuring is done photometrically, total fluorescence is recorded and measured, and the method is approximately 300 times as sensitive as the visual method.

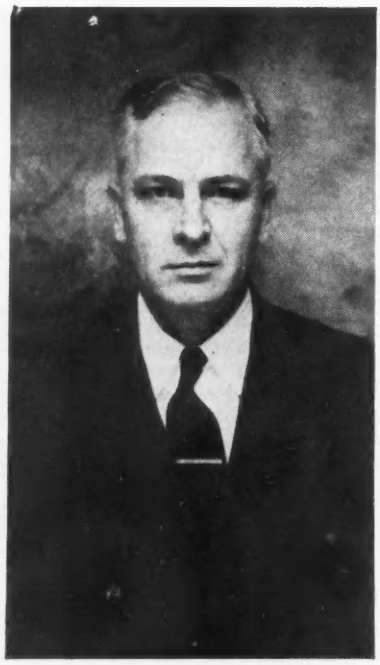
More specifically, fluoranalysis records the fluorescent intensity of rock samples under an ultra-violet light of a particular wave length, on a light sensitive medium. The opacity, or density, of each sample image is directly proportional to the fluorescent intensity of the sample. The unit of measurement is one ferg (one unit of fluorescent intensity) as compared with a standard substance of great stability.

A porous rock recovered from the subsurface which shows a value of 1.25 fergs, or more, is definitely from a commercial pay zone. The schedule of interpretative values shown on fluorologs is subject to minor variations in different regions and at various depths.

Because reservoir rocks which have long been in contact with petroleum retain a high fluorescent intensity even after the oil has been removed from the rock by the flushing action of drill fluid or solvent, the identification of oil and gas sands by fluoranalysis has proved

About the Author

ORTON E. CAMPBELL, vice president of Fluorographic Exploration Company, became interested in the fluorographic technique of oil exploration some years ago and applied it to several interesting problems in South Texas before deciding to give his full time to the science. He studied mining and petroleum geology at the Texas School of Mines, El Paso, and at S.M.U., Dallas. In 1929 he joined the geological department of Sun Oil Company and served with that company continuously, with the exception of a year, until 1943 when he went to Houston with Fluorographic Exploration Company. His geological experiences included assignments in the Houston, San Antonio and McAllen, Texas, districts and in Mississippi.



very effective. This fluorescent intensity retained by the rock material after the oil itself has been eliminated is referred to as the "fixed fluorescence." On fluorologs the "fixed" data are plotted as solid line curves. The fluorescent intensities of the free oil and gas in well samples are referred to as "free fluorescence" and these data are plotted on fluorologs as broken-line curves.

Until a significant showing is encountered only composite samples of cuttings are fluoranalyzed. A composite sample is obtained by mixing proportionate parts of continuous cuttings samples from a section of drill hole, usually about 200 feet. The two heavy-line curves, solid and dashed, placed on the left-hand side of fluorologs are curves drawn on data obtained from composite samples.

To locate a showing within the range of a composite sample it is necessary to fluoranalyze separately the several samples combined to form the composite sample. An individual cuttings or core sample is referred to as a "detail sample" and the fluoranalyses of detail samples are known as "detail fluoranalysis." Curves drawn on detail data (superimposed on the composite curves) are known as "detail curves." Detail fluoranalysis locates the depth of a showing within the interval represented by the sample taken. Most cuttings samples are taken at intervals of 20 to 30 feet. It is obvious that, to facilitate accurate depth location of shows, it is often desirable to have samples taken at lesser intervals.

In plotting the fluorescent intensities of well samples, from dry holes and producing wells, it has been observed that the rocks of a geologic section overlying an oil accumulation show a considerably higher average fluorescent intensity than the rocks of a section penetrated in barren territory. The average fluorescent intensity of a bore hole section is shown on the fluorolog by the Progressive Composite Average Curves (on right-hand side of the log), and these curves are so drawn that points on them represent the average fixed and free value of all higher composite samples.

The theory of fluorologging is based on the premises that leakages of microscopic quantities of petroleum, from subsurface petroleum accumulations, have occurred during geological time and are occurring now. The minute quantities of petroleum which have leaked upward into the overlying strata cannot be detected by ordinary means, but they can be detected and measured by the fluorograph. The sensitivity of this instrument, in recording fluorescence, is approximately 300 times that of the human eye. Fluorologging detects and measures petroleum, and detects and measures its effect upon the fluorescent property of the rocks through which it passes. Hence, fluorologging enables the detection of a petroleum reservoir vertically below or laterally from a drill hole, and affords a very sensitive test for detecting, locating and evaluating petroleum shows in a drill hole.

The foregoing describes the principle and methods involved in compiling fluorologs. Now consider the principal uses to which this technique can be applied. It has been pointed out that a fluorolog can anticipate the probable presence of commercial pay ahead of the drill bit. But the fluorolog is adaptable to other exploration problems.

Uses for Fluorologs

In Developing Multi-Sand Fields: After an area is brought into production from one sand, the search for deeper sands is often delayed, due to the cost of deep drilling. In a one-sand field the Progressive Average Curve will decline to normal value after the drill passes the one producing sand. In a multiple-sand field the curve will regain its anomalous characteristic as each successive pay is approached. Hence, the presence of a still deeper pay can always be detected by the fluorolog of a well drilled 500 to 2000 feet below the deepest known pay.

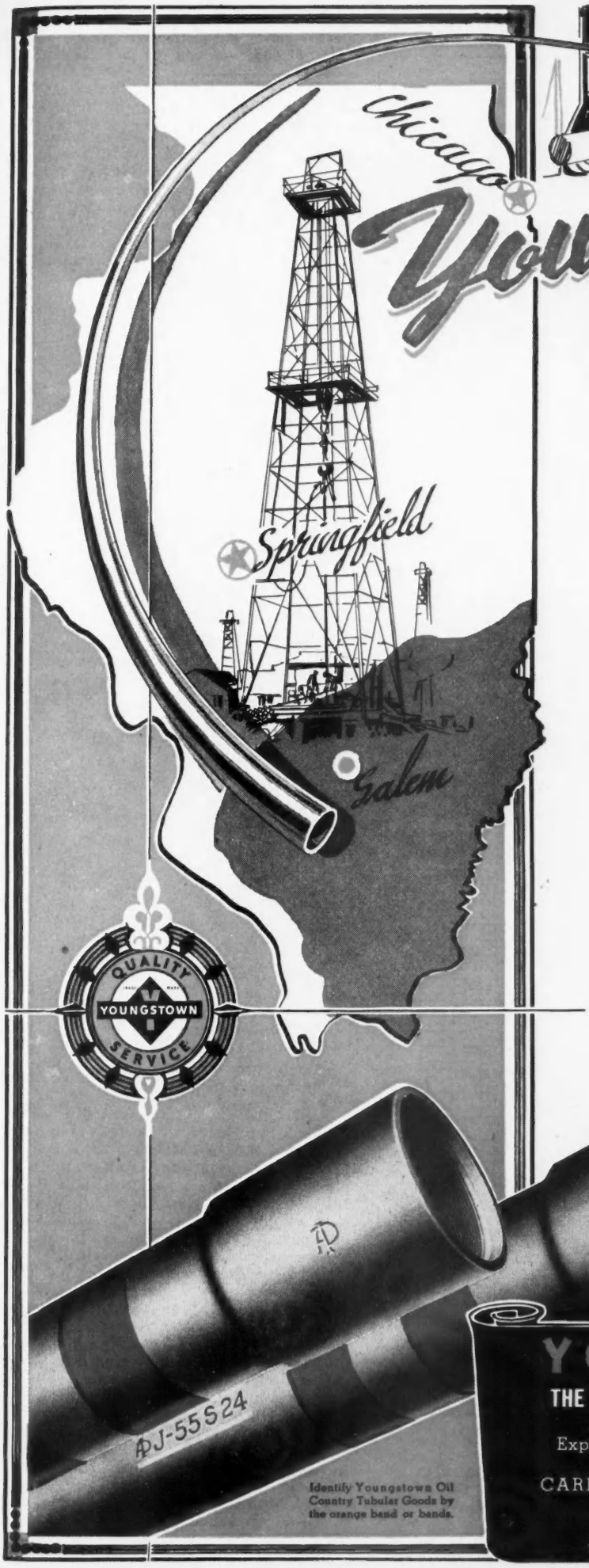
In Core Drilling: If the samples from the first 2000 feet of a drill hole will reveal the presence or absence of an oil accumulation at greater depths, then it is essential that samples from all shallow drill holes, especially core drill holes, be saved and fluoranalyzed. The availability of fluorologs enables an operator to obtain, from core hole samples, data on accumulation as well as on structure. Hence, it is quite obvious that, used in conjunction with fluoranalysis, core drilling can be adapted to exploration for non-structural accumulations, thus inaugurating an altogether new type of exploration.

The depth at which the average fixed fluorescent intensity of the geologic section under a location can be determined is known to vary from region to region. Fluorologs compiled on deep wells in the United States and Canada disclose that the necessary depths range from 100 to 2000 feet. In regions where practical results can be obtained at a few hundred feet, fluorologging affords a very rapid, economical and effective method of exploration, which method is especially adapted to prospecting for stratigraphic accumulations. Many accumulations, due to structure, are controlled by minor structural features and/or stratigraphic conditions, with the results that the producing area may be but a part of the structural area. The matter of locating the areas of accumulation on a structural prospect becomes doubly important when a deep test is to be drilled. With fluorologs available it probably will become customary to precede a deep test with core hole prospecting to obtain evidence of deeper accumulation.

Better Drilling Control: Fluorologs afford better control on all drilling wells. If a well shows the earmarks of a producer at a shallow depth, there is little doubt but what the well will be very carefully drilled. The revealing information obtained from a fluorolog at a shallow depth will enable the operator to acquire advantageously desirable lease and/or royalty interests not already held. Knowledge concerning the probable outcome of a well, ahead of the drill bit, will certainly afford an operator many advantages, some of which will develop only from experience.

Drilling Near Oil Areas: Fluorologs also develop patterns characteristic of dry holes without shows and characteristic of dry holes drilled near production. These characteristic logs used in conjunction with other data are a great aid in determining what results to expect in a drill hole, and as already mentioned, enables the operator to exercise considerable foresight, since the fluorolog is available as the drilling progresses, as well as after reaching the total depth.

The outstanding characteristic of a dry hole drilled near production is higher values on the free curves; the free curves run outside the fixed curves. This is obviously due to the lateral leakage of free oil from the nearby accumulation. Most edge wells usually have some showings detectable by ordinary means, but they have continuous microscopic showings detectable only by fluoranalysis. Hence, such logs characteristically show critical local kicks



Youngstown to ILLINOIS

ILLINOIS is one of the most active oil regions, even though 1941 saw the end of its greatest drilling boom. It tops the list in number of wildcat wells projected for this year, well ahead of North Texas, the most active wildcatting area of that great oil state.

The oil strength of Illinois lies in its many scattered pools. Proven reserves increased a good ten percent last year--up to nearly 360 million barrels, which is more crude than is produced annually in Soviet Russia, or all the rest of Europe, or Asia. Ranking eighth among the states in total proven reserves and sixth in 1945 crude production and sixth in all-time production, Illinois will continue as one of America's important petroleum sources for years to come.

Ever since Illinois' oil industry really got under way in 1905, Youngstown has been a major supplier of drill pipe, casing, tubing and line pipe. Operators here, as in every other oil producing area in the world, have learned through experience to recognize the orange bands on Youngstown pipe as the mark of quality and dependability.

Location circled indicates Continental Supply Company store.

YOUNGSTOWN

THE YOUNGSTOWN SHEET AND TUBE COMPANY

GENERAL OFFICES - YOUNGSTOWN 1, OHIO

Export Offices - 500 Fifth Avenue, New York City

Manufacturers of

CARBON - ALLOY AND YOLOY STEELS

Pipe and Tubular Products-Sheets-Plates-Conduit-Bars
Coke Tin Plate-Electrolytic Tin Plate-Rods-Wire-Cold
Drawn Carbon Steel Rounds-Tie Plates and Spikes.

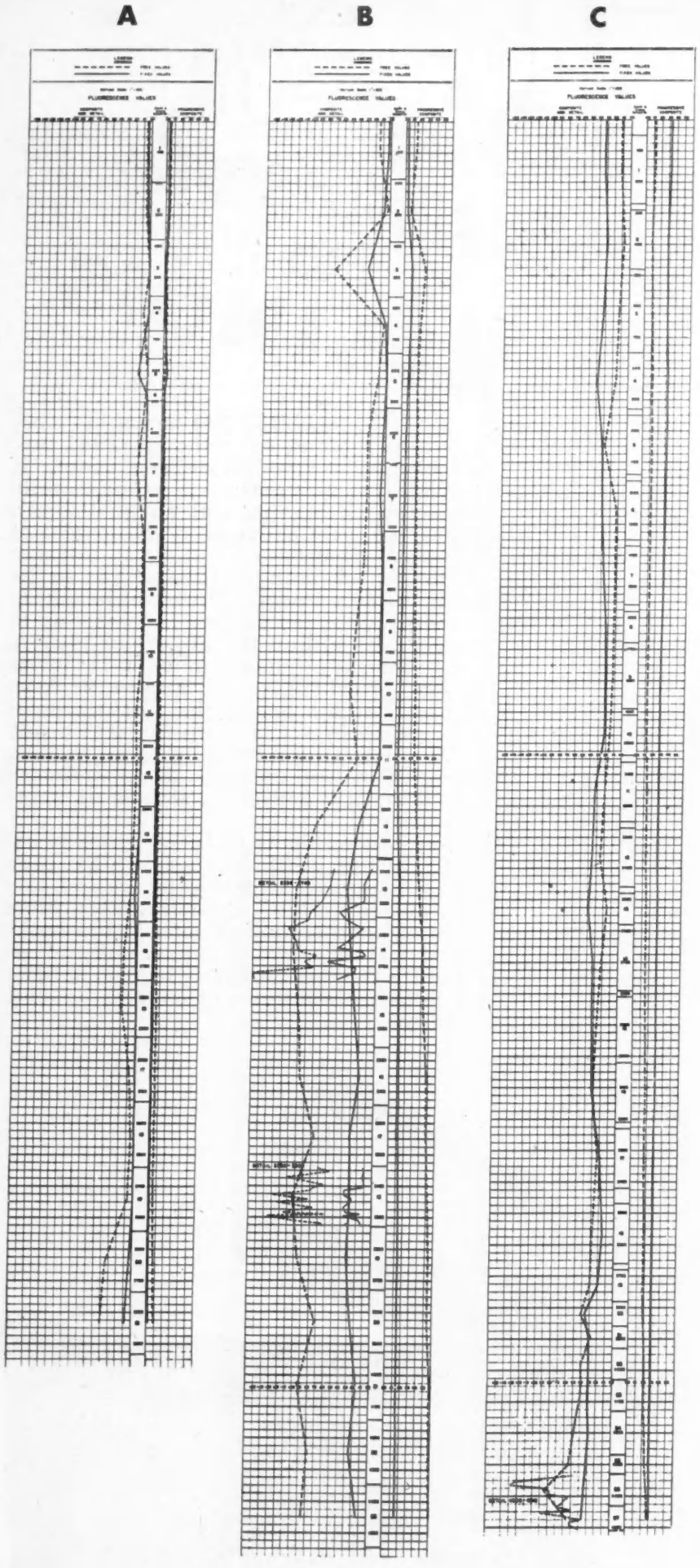


Figure 1. Fluorologs showing how free and fixed intensity curves are plotted for (A) dry hole; (B) edge well and (C) producer.

on the composite curves. Some detail analyses are usually necessary, which result in a detail curve with subcritical kicks.

The chief characteristic of the fluorolog of a producer is that the fixed Progressive Average Curve starts with a value of .25 fergs, or more, or attains such a minimum value by the time the well reaches 2000 feet, and maintains it downward to the pay zone. Also, the fixed curves nearly always run outside the free curves. The Free Progressive Average Curve may start at a subcritical value and may show some erratic tendencies, but it usually shows a progressive buildup as a pay horizon is approached. On many fluorologs of producers the Free Progressive Average Curve will show a steady buildup from the surface down to the pay zone.

The characteristics described are generally developed, but there are variations, caused by local stratigraphic and structural conditions, which change the interpretative schedule without lessening the value of the data.

When enough fluorologs are available to provide regional control in mapping subsurface fluorescent intensity data by contouring, such maps will develop anomalies significant to areas of accumulations. Isofluors drawn on fixed data would show sharply defined maximum anomalies over production. The free data would tend to show minimum anomalies over production with a maximum rim around the edge of the producing area. Isofluors drawn on combined fixed and free intensity would develop rather flat maximum anomalies. It is obvious that for exploration purposes isofluor maps drawn on the free data would be the best, since the anomalies obtained would affect more area than anomalies developed on the fixed data and would be sharper than anomalies drawn on combined fixed and free data.

In Slim Hole Drilling: A slim hole may be defined as a hole drilled at a minimum cost to obtain limited information, and to find production if possible. At present, full dependence is placed on electrical logs and sidewall cores to obtain saturation data on slim holes. Fluoranalyses of the cuttings samples from a slim hole will characterize it as a probable producer or a probable dry hole; will indicate whether or not it is drilled near an accumulation; and will afford dependable saturation data from cuttings and sidewall cores. On a slim hole a fluorolog is a very valuable supplement and check for the electrical log insofar as saturation is concerned, especially in geologic sections which do not always develop an electrical resistivity pattern significant to saturation. This subject is more fully developed under another heading. The adaptability of fluoranalysis to obtaining accurate saturation data from small samples is also discussed under a later heading. For the reasons given and due to the insignificant cost, fluorologs and fluoranalysis should soon become conventional aids in obtaining more data from slim holes.

Aid to Subsurface Geology: Very often limited subsurface control indicates the probable presence of favorable structural conditions and accumulation, without enabling the geologist to locate the

potentially producing locality. Data on accumulation as obtained from fluorologs will often aid the geologist to identify and locate productive areas without drilling unnecessary dry holes. Suppose Wells 1, 2 and 3 are dry holes drilled in line across the area of possible closure and accumulation, that the accumulation lies between Wells 2 and 3, that each of these wells are close enough to the reservoir to show anomalous fluorescent intensities characteristic of dry holes drilled near production, and that Dry Hole 1 shows a fluorolog characteristic of barren territory. In this case the fluorescent data combined with the subsurface data definitely indicate the accumulation to be between Wells 2 and 3, whereas according to subsurface data alone it could be between Wells 1 and 2 or between Wells 2 and 3.

To Evaluate Shows: So far the general characteristics of fluorologs have been emphasized. The general characteristics of fluorologs are available from cuttings samples at comparatively small cost and their reliability does not require great accuracy in the matter of taking samples. But fluoranalysis and fluorologs are fully applicable to obtaining detail information on saturation. The refinement of the data obtained is limited only by the type and the accuracy of samples used. The Progressive Average data are concerned with the well—the geological section—as a unit. The local Composite curve shows the average fluorescent intensities of progressive sections of the drill hole. Individual cuttings samples afford data on still smaller units of section. Highly detailed data are obtainable from conventional and sidewall core samples. Fluoranalysis is adaptable to the entire drill hole or to a single sidewall core sample, and its use can be applied to fit the problem at hand according to the judgment of the operator.

Supplementary to Electrical Logs: Fluorologs can be used as a general check on the resistivity curve of electrical logs. An electrical log nearly always affords good data on porosity, but in some geologic sections electrical data on saturation is poor or wholly lacking. In such sections the porosity data from the electrical log plus the saturation data from the fluorolog will furnish the complete data needed to detect, locate and evaluate prospective producing zones. Fluorologs fill the need for dependable saturation data on limestone reservoir rocks, which are commonly found in West Texas and other regions.

Economical Substitute

Occasionally a drill hole is lost due to stuck pipe, blowout or some other reason. Often in such cases there is a section of the hole on which an electrical log has not been run. But samples are taken as a well is drilled, hence a fluorolog is available as a substitute on the lost portion of a drill hole.

A fluorolog can be used as an economical substitute for similar services, such as core analysis and other services which are used to identify, locate and evaluate pay zones.

A fluorolog supplements an electrical log as a guide in taking sidewall cores, and in some geologic sections it may be the only guide.

In Core Analysis: Since fluoranalysis is based on intensity, it is adaptable to very small samples, such as small sidewall cores and small recoveries on conventional cores. The data obtained by fluoranalysis on these small samples is fully definite as far as picking commercial saturation is concerned. The present tendency to require larger sidewall samples is not necessary with the availability of fluoranalysis. It is both convenient and desirable to take sidewall cores immediately after running the electrical log, and to take the cores on the same line used in running the electrical log. This arrangement followed by fluoranalysis of the sidewall cores is recommended as the most economical and expedient program to follow.

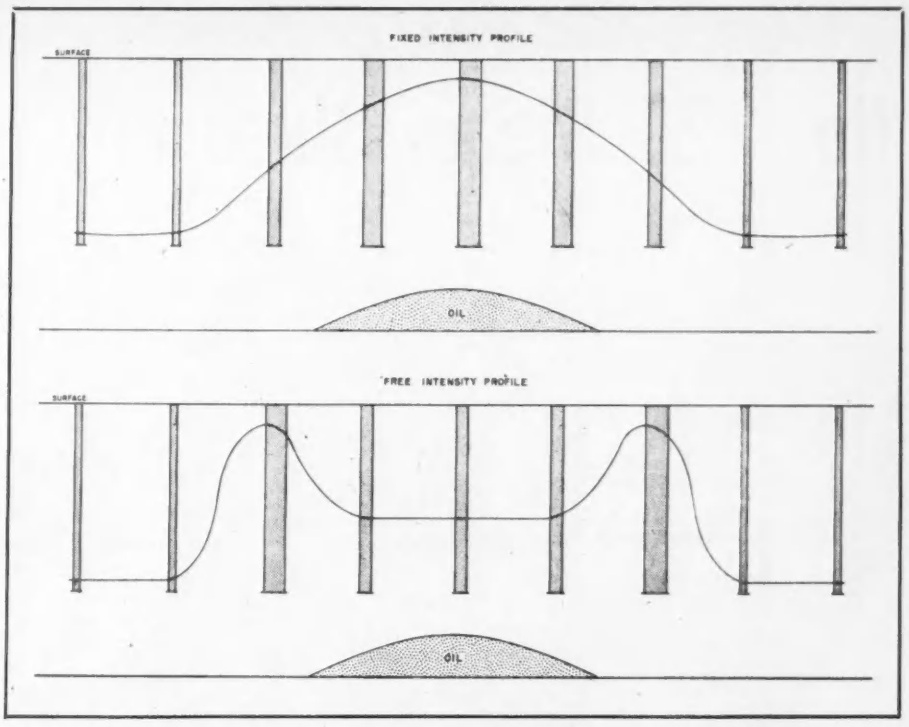


Figure 2. Ideal core hole fluorolog profile across a hypothetical accumulation. The diameter of the annular area of high free fluorescent intensity is more or less proportional to the size of the accumulation.

The availability of reliable saturation data from sidewall cores encourages the use of sidewall coring, which in turn expedites the drilling of a well. Fast drilling as good practice is accomplished by slim hole drilling. Hence, it is obvious that detail fluoranalysis on sidewall cores is a very definite aid to slim hole drilling. The overall control afforded by the fact that fluorologs indicate the presence of production both laterally and vertically plus the dependable saturation data obtainable by detail fluoranalysis, tends to raise the exploratory value of a slim hole drilled today to that of a well drilled heretofore in the conventional manner.

Detail fluoranalysis of core samples is a satisfactory substitute for core analysis insofar as saturation is concerned. With continuous sidewall core samples available oil-water levels can be accurately determined.

To Identify Geological Formations: This particular use of fluorologs has been limited and not greatly developed. Fluorologs used for this purpose should be compiled from the fluorescent intensity data obtained on well samples without elimination of the mineral fluorescence. Since the technique of fluoranalysis is very flexible such logs can be easily complied. These logs are adapted to the subdivision of very thick stratigraphic units, which cannot be subdivided for correlation purposes by any conventional and economical method.

Systematic Sampling of Cuttings Necessary

Sampling should begin at or near the surface in taking samples for the compilation of fluorologs. The value of the Progressive Average Curve in anticipating the presence of an accumulation fully justifies establishing its trend as soon as possible. If regular sampling is not begun before surface casing is set, some samples, taken at intervals above the surface casing will help. The Progressive Average Curve is based on averages, hence a fairly representative set of samples, with exact depths unknown, from the surface section may be of some value. However, it is better to sample a hole systematically from the surface to the total depth.

Cuttings samples taken at intervals of 30 feet are satisfactory, but the shorter the sample interval the more reliable and accurate the results will be.

Samples used in compiling fluorologs must be representative of the formations drilled, and include sand cuttings as well as shale cuttings. The samples must be taken from the mud stream, and not after the samples have passed a vibrating shale shaker.

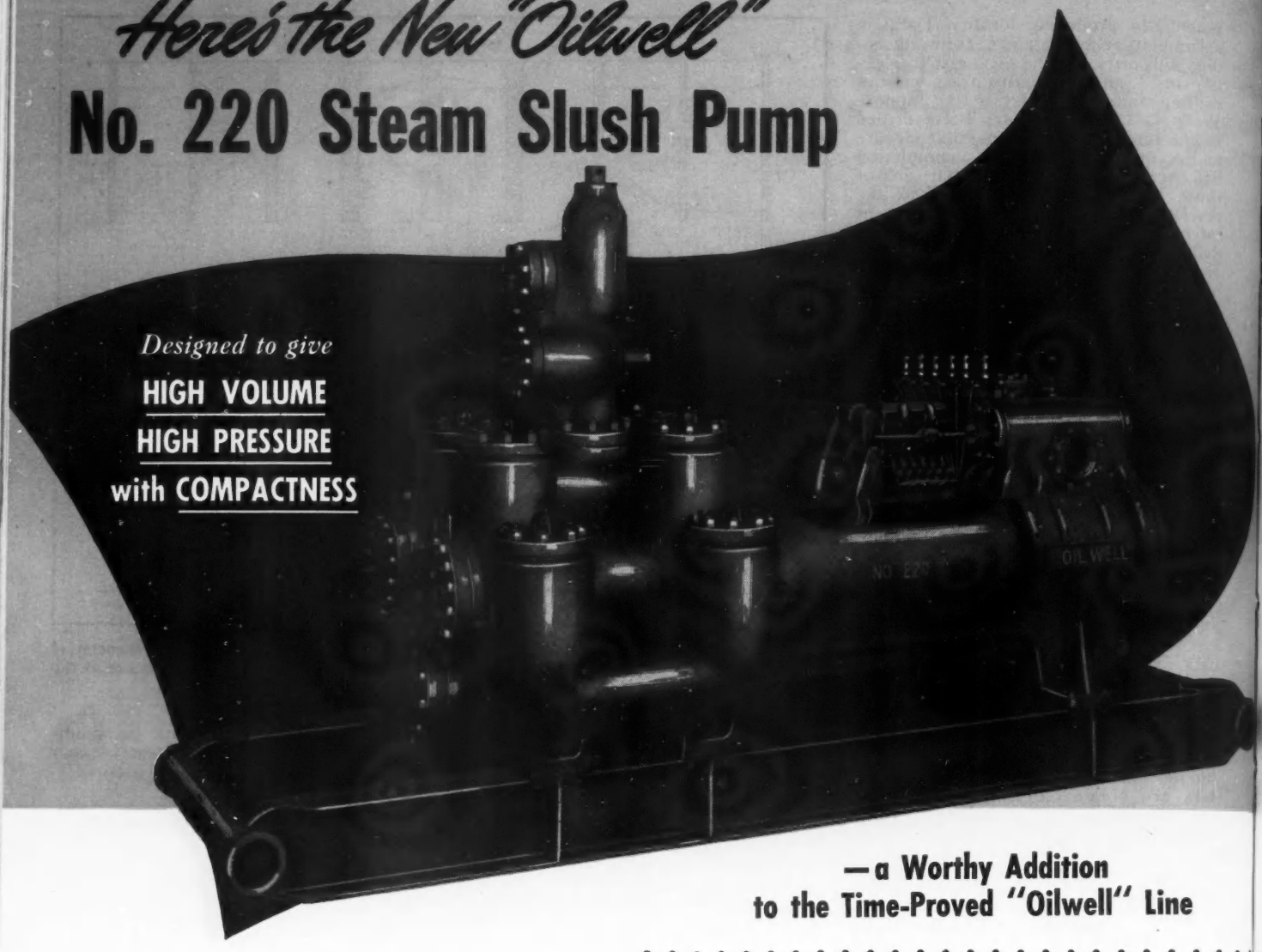
Large samples are not needed. Samples one ounce in volume—sufficient to cover the palm of one's hand—are sufficient. The samples should be washed, dried at moderate temperature and kept free of contamination by oil. Contamination affects the free fluorescence only; fixed fluorescence is affected, or destroyed by high temperatures, but not affected by contamination.

---

[1] "Ferg" is a unit of measurement, the name of which was coined by the author to honor W. B. Ferguson who developed the fluorolog technique.

Here's the New "Oilwell"

No. 220 Steam Slush Pump



Designed to give

HIGH VOLUME
HIGH PRESSURE
with COMPACTNESS

—a Worthy Addition to the Time-Proved "Oilwell" Line

THE No. 220 Steam Slush Pump is a sturdily constructed duplex pump of larger size and capacity than "Oilwell's" well-known No. 20 Duplex Steam Slush Pump. Its moderate weight, compact size and ability to deliver a large volume of mud at high pressure makes the No. 220 a popular choice in fields where the larger "Oilwell" No. 320 Triplex Pump is not needed.

This latest addition to the "Oilwell" line incorporates all of the latest improvements which "Oilwell" engineers have developed for steam slush pumps.

SERVICE RATINGS	Duplex No. 20	Duplex No. 220	Triplex No. 320-HD
Number of Cylinders ----- inches	2	2	3
Steam Cylinder Bore ----- inches	16¼	18	18
Maximum Liner Size ----- inches	7¾	8	7
Stroke ----- inches	20	20	20
Theoretical Displacement ----- gallons per revolution	15.46	16.38	18.45
Maximum Working Pressure:			
Discharge ----- p.s.i.	3,000	4,000	4,000
Suction ----- p.s.i.	2,000	3,000	3,000
Rated Steam Working Pressure p.s.i.	350	400	400
Dimensions:			
Overall Length (Pump only, less Suction Strainer) -----	11'3½"	11'2"	11'7⅝"
Overall Width (Pump only) -----	5'2"	5'7"	7'10"
Overall Height Including Skids and Air Chamber -----	7'9⅜"	8'1"	8'10"
Shipping Weights, Mounted on Standard Steel Skids:			
Domestic ----- pounds	20,850	23,800	29,600
Export ----- pounds	21,750	24,750	30,600

OIL WELL SUPPLY COMPANY

Branches Serving All Oil Fields

Executive Office—Dallas, Texas
Export Division Office—
30 Rockefeller Plaza
New York 20, N. Y.

Division Offices—Columbus, Ohio
Dallas, Texas . . . Denver, Colorado
Houston, Texas . . . Tulsa, Oklahoma
Los Angeles, California

UNITED STATES STEEL

OIL WELL SUPPLY COMPANY · USS · "OILWELL" · UNITED STATES STEEL

"OILWELL"

Tax Review

A Regular Feature of THE OIL WEEKLY

By WILLIAM O. TAYLOR*

Tax Court denies deductibility of cost of geophysical survey and Costs of Minerals Condemned by drilling.

IN the first modern case squarely involving the point, the Tax Court has held in *The Louisiana Land and Exploration Company vs. Commissioner, 7 T.C. No. 62,* that the cost of a geophysical survey is not a deductible expense for income tax purposes. Over a period of many years, taxpayers charged such costs to expense without objection from the government. Five or six years ago, it became known that the government was inclined to require that such costs be capitalized as lease cost. Vigorous argument by trade associations of the oil industry forestalled the application of any general rule whereby all such costs must be capitalized. Rather, the government released, informally, a set of rules of rather general import, the upshot of which has been that each taxpayer's problem has been worked out more or less on its own circumstances.

The taxpayer in the above case owned a lease on two non-contiguous tracts of approximately 5000 and 13,000 acres, respectively. The geophysical survey, which covered both tracts, was made after the above lease was acquired and was apparently made by an outside party. After the survey was made, additional leases covering about 2300 acres within or contiguous to the larger of the above tracts were acquired. The court did not determine as a fact that either the acquisition of the additional leases, the retention of the earlier lease, or the drilling campaign begun some six months after the survey was finished, resulted from the survey. It did determine as a fact that the survey was not made for the primary purpose of locating a well.

The taxpayer argued that the cost of the survey was an ordinary business expense; under the government's contention and the decision of the Tax Court, it was a capital expenditure, to be added to lease cost and written off through depletion or upon sale or abandonment of the lease. The court, in distinguishing capital expenditures from current expenses, emphasized the "extent and permanency of the benefit derived" as establishing the capital nature of an expenditure. It concluded that the geophysical survey was, in fact, a part of the whole scheme of exploration of the leases and that the benefits derived from it would last throughout the time that the leases were held.

The court said little, if anything, which can categorically be called wrong. The decision does not mention, and the court may or may not have considered, a factor which is fundamental in deciding the question of expense vs. capital: will net income for the year be materially distorted if the item in question is treated as an expense? In the case of geophysical costs, that question can probably be answered negatively in most cases, since most of such costs are probably incurred by operators who maintain year-round crews or farm out their work on the basis of more or less constant amounts set apart in their annual budgets.

It should be noted that in the *Louisiana Land and Exploration Company* case, all the area which was shot was already under lease (and was retained) or was leased after it was shot. The decision, therefore, casts no light on a situation in which a large area is shot and only a part of it is leased, except perhaps to establish that part of the shooting cost must be capitalized. If it should be established by later cases that all shooting cost must be capitalized if any part of the area is leased, the government will have to be prepared to meet the situation in which a token amount of acreage is leased for the purpose of deferring the deduction of the shooting cost until the year in which it will be of the greatest tax benefit.

The same case involved the deductibility of part of the cost of a fee tract by reason of its having been condemned for oil or gas by a dry hole. It was determined as a fact that the property, when purchased, had value attributable to mineral prospects. The deduction of that part of the cost was disallowed, however, because the surface rights apparently had some value and because it was not shown that there was no possibility of mineral value other than oil or gas. The difficulty, if not the impossibility, of proving the latter is indicated by the fact that the court seemed willing to assume that future developments might find a use for some mineral on the land which is, at present, worthless.

Taxpayers who have unaudited tax returns in which they charged off the value of mineral rights which included minerals other than oil and gas or which involved tracts in which they also owned surface rights should consider whether the deduction is worth releasing such rights. Even if this is done, the government may take the position that the final exhaustion of value is due to a gift and is not deductible. A gift, however, involves a donative intent, i.e. a purpose to confer a benefit on the donee, and it seems doubtful that a release of an interest for the sole purpose of establishing a tax deduction is a gift.

Tax Court Holds Gain on Sale of Royalty Is Not Capital Gain

In the case of *Foran vs. Commissioner,* a tax court memorandum decision, the taxpayer was a royalty broker who, as is usually the case, did some trading in his own right. The amount of the latter is not disclosed, but it may be inferred from the language of the court that such transactions were infrequent. In 1941, the taxpayer sold some producing royalties which he had owned for more than 18 months. Most of them appear to have been unproved at the time he acquired them. He had never before sold a producing royalty and testified that he had at one time intended to keep these particular royalties as security for his children.

The taxpayer claimed he was entitled to treat the gain on the sale of the royalties as a capital gain. The court held it was ordinary income, inasmuch as the sale was made in the ordinary course of the taxpayer's business as a buyer and seller of oil royalties.

This appears to be a rank injustice about which not much can be done. If one has bought and sold to any appreciable extent, there is undoubtedly considerable danger that any sale he makes will be held not to result in capital gain. What was held in this case as to a trader in royalty interests might as well be true of one who has traded in leases, even if he should develop a lease prior to selling it.

In pointing out that there was nothing to distinguish the royalty invo'ved in the *Foran* case from other royalties which the taxpayer had theretofore bought and sold, the court emphasized that there was "no special entry" in the taxpayers records with respect to it. Taxpayers should not lightly assume that no more than special treatment in their records will be required to give them the benefit of the capital gains provisions; nor that such treatment will be available to them on royalty sales merely because royalty trading is not their principal business.

One possible solution to the problem is to incorporate the royalty some time prior to sale and then sell the corporate stock rather than the royalty itself. It should be remembered, however, that it is usually easier to get property into a corporation than it is to get it back out again, should the latter for any reason ever become desirable.

☆

Kansas High Court to Rule on 25-Barrel Minimum Allowable

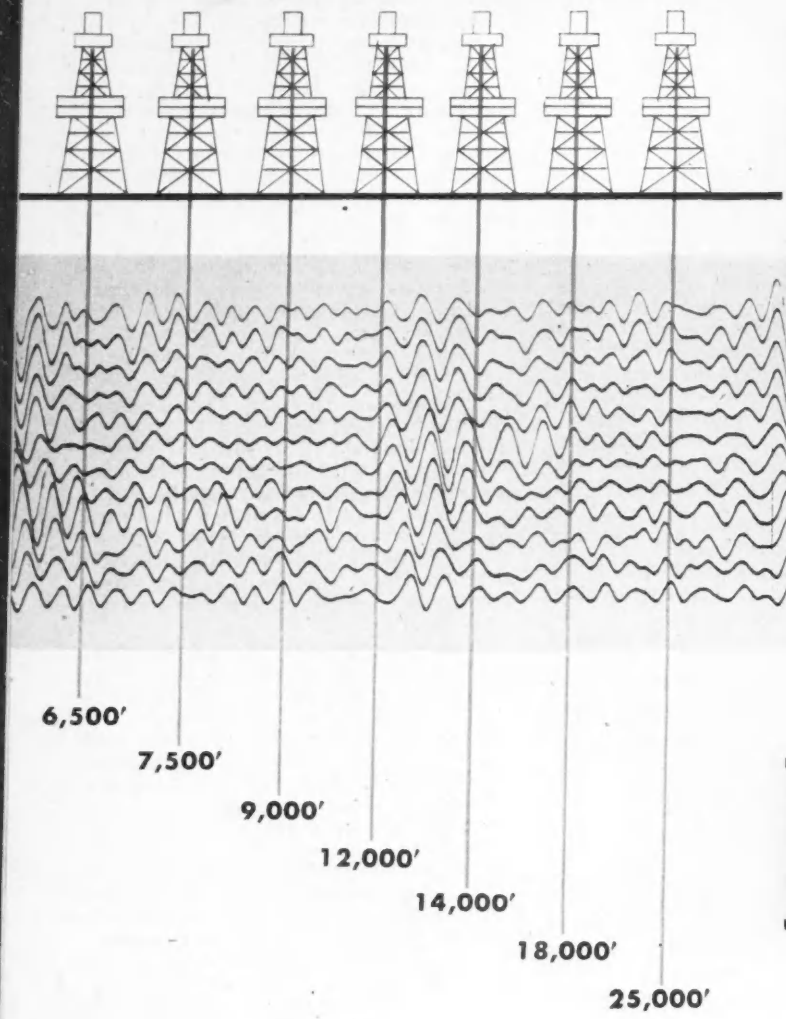
Authority of the Kansas Corporation Commission to set a statewide minimum daily oil well allowable of 25 barrels will be decided by the Kansas Supreme Court.

An appeal from the decision of Judge Robert Garvin of the Barton County district court was filed December 13 in the Supreme Court by the commission, defendants in an action brought by Aylward Producing Company, Aladdin Petroleum Corporation, Solar Oil Company, The Atlantic Refining Company, Stelbar Oil Corporation, National Co-Operative Refining Company, and George Reeves and A. S. Ritchie.

Magnolia Gets Leases

Magnolia Petroleum Company paid the top price for Indian leases in Caddo County at a sale in Anadarko, Okla. A price of $4504 for lease on the northeast quarter of 21-6n-12w, south of Fort Cobb and north of the Apache field, was paid by the company. Thirty-four tracts were sold for a total bonus of $36,561. A total of 133 tracts in five counties was offered.

* The author is a member of the law firm of Butler, Binion Rice & Cook, Houston.



DEEPER DRILLING *is still your* NEXT FRONTIER

GENERAL RESEARCH IS FAR AHEAD OF TODAY'S DEEPEST PRODUCTION

Deeper drilling in present producing areas affords a vast field in the search for an estimated 30 billion barrels of new oil the United States will need in the next 20 years.

General Crews, working with advanced-design exploration equipment, are now compiling accurate data far in advance of today's deepest production. They are accurately determining and locating conditions favorable to finding new oil in prospective producing formations as deep as there are reflecting horizons . . . to the deepest sedimentary beds.

For more than a decade, operators have relied on experienced General Crews . . . working with latest design equipment . . . to lead the way to their next discovery well . . . to approve or condemn acreage. Accuracy, regardless of depth, has been characteristic of all General operations. Let General Crews help outline your next frontier for tomorrow's reserves. Crews are available for domestic and foreign work.

General GEOPHYSICAL COMPANY GGC HOUSTON

November Exploration Exceeds 1945 Period

NOVEMBER'S exploratory well completions failed to equal October's total, which is the record high for the current year, but did show an increase over last year's like month.

Although the total of exploratory completions so far this year leads last year's comparable period by 8 percent, it has not shown as much increase as combined drilling, exploratory and non-exploratory, which at the end of 11 months held a 13 percent lead. All drilling was prevented from reaching fullest proportions by shortages of materials and equipment. These shortages worked particularly against wildcatting and perhaps held that class of drilling down more than field development or routine drilling. Most operators that lacked adequate tubing supplies, cement or first-class machinery were hesitant in going into and drilling territories of unknown pressures and conditions permittted more accurate estimates on what would be needed.

During November there was 419 exploratory wells completed against 486 in the previous month and 370 in the like

Summary of Results of Exploratory Drilling

ITEM	Nov., 1946	Oct., 1946	Eleven Months JAN.-NOV. 1946	1945	Percent Diff.
Oil Discoveries	37	59	469	433	+ 8.3
New Fields	25	36	286	292	— 2.1
New Pays	12	23	183	141	+ 29.8
Distillate Discoveries	12	3	70	41	+ 70.7
New Fields	6	1	32	28	+ 14.3
New Pays	6	2	38	13	+192.3
Gas Discoveries	6	6	105	105	.....
New Fields	4	6	80	93	— 14.0
New Pays	2	.....	25	12	+108.3
Total Discoveries	55	68	644	579	+ 11.2
Extensions to Fields	15	14	197	168	+ 17.3
Oil Fields	11	10	142	143	— 0.7
Distillate Fields	1	.....	5	6	— 16.7
Gas Fields	3	4	50	19	+163.2
Total Prod. Tests	70	82	841	747	+ 12.6
Dry Holes	349	404	3,516	3,288	+ 6.9
Wildcats	342	391	3,426	3,215	+ 6.6
New Pays	2	4	35	38	— 7.9
Outposts	5	9	55	35	+ 57.1
Total Expl'tory Tests	419	486	4,357	4,035	+ 8.0
Percent Productive	16.7	16.9	19.3	18.5	.....
Percent Dry	83.3	83.1	80.7	81.5	.....

Results of Exploratory Drilling in November and First 11 Months, 1946-1945, by Districts

State or District	MONTH OF NOVEMBER, 1946													FIRST ELEVEN MONTHS, 1946																	
	Productive Tests									Unproductive Tests			Total Exploratory Tests	Productive Tests								Total Productive		Unproductive Tests				Total Exploratory Tests	
	New Fields			New Pays			Extensions			Total Productive	Wildcats	New Pays	Outposts		New Fields			New Pays			Extensions						Total Dry			
	Oil	Gas	Dis.	Oil	Gas	Dis.	Oil	Gas	Dis.						Oil	Gas	Dis.	Oil	Gas	Dis.	Oil	Gas	Dis.	11 Mo. 1946	11 Mo. 1945	Wildcats	New Pays	Outposts	11 Mo. 1946	11 Mo. 1945	11 Mo. 1946	11 Mo. 1945
Alabama											1			1											2	12			12	20	12	22
Arizona																										2			2		2	
Arkansas							1			1	5			6	4			2			2			8	2	46		1	47	37	55	39
California	1						1			2	22			24	11	4		4			7	4		30	15	229			229	263	259	278
Colorado	1									1				1	1			1			4			6	5	10	2	1	13	8	19	13
Florida											3			3							1			1		22			22	12	23	12
Georgia																										2			2	6	2	6
Illinois	2			2			5			9	53			62	27			28			47			102	99	492			492	362	594	461
Indiana											6			6	6	1		3			5			15	10	78			78	87	93	97
Iowa																														1		1
Kansas	2									2	29			31	36	6		6			18	13		79	89	246			246	302	325	391
Kentucky	1						1			2	9			11	7	2		4			6			19	12	80			80	90	99	102
Louisiana			1			3	1		1	6	16			22	16	5	6	29	3	15	2	2	1	79	56	192	1	3	196	125	275	181
North Louisiana			1				1		1	3	8			11	6	4	3		1	2	2	1	1	20	18	110	1	2	113	77	133	95
South Louisiana						3				3	8			11	10	1	3	29	2	13		1		59	38	82		1	83	48	142	86
Michigan		1								1	16			17	11	5	1		3		5	1		26	28	208	1	2	211	230	237	258
Mississippi											12			12	1	1				1		1		4	11	69			69	116	73	127
Missouri																										16			16	20	16	20
Montana											3			3	1	1		2						4	8	19		3	22	16	26	24
Nebraska											2			2												5			5	3	5	3
New Mexico											4			4				2			2	1		5	13	46	2		48	64	53	77
New York																										1			1		1	
North Carolina																										1			1	1	1	1
Ohio											4			4	1	8					1	14		24	27	40			40	59	64	86
Oklahoma	8	3		3			2			16	59			75	59	19	1	8	5		16	3	1	112	102	356			356	281	468	383
Oregon																										2			2		2	
Pennsylvania																3								3		4			4		7	
South Dakota											2			2												3			3	1	3	1
Tennessee																										2			2	3	2	3
Texas	10		5	6	2	3		3		29	94	2	4	129	102	20	23	91	13	22	23	10	3	307	250	1213	27	43	1283	1153	1590	1403
E. Texas Border															3	3	1	1				1		9	8	11			11	19	20	27
Rest of E. Texas	1									1	5			6	6		2	3			1	1		13	11	76	2		78	68	91	79
North Texas	4			1						5	28			33	31	2		16	1		2			52	50	339	4	2	345	282	397	332
West Central	2			1						3	11			14	24	3		12						39	22	164	6	2	172	119	211	141
West Texas	1				1					2	10	2		14	16	4		14	1		11			46	48	129	10	18	157	203	203	251
Panhandle																										11	1		12	9	12	9
Upper Coast			1			3				4	13			17	7		5	23	4	14	5	2	2	62	55	128	1	3	132	132	194	187
Lower Coast	2		4	4				1		11	9		4	24	5	3	14	19	2	8	1	4	1	57	43	138	2	12	152	163	209	206
Southwest					1			2		3	12			15	4	5	1	3	4		3	2		22	9	127	1	4	132	108	154	117
South Central											6			6	6				1					7	4	89	1	2	92	50	99	54
Utah															1									1		4			4		5	
Virginia																										2			2		2	
Washington																										1			1	1	1	1
West Virginia																4								4		8			8		12	
Wyoming				1						1	2		1	4	2	1	1	3	1		3	1		12	18	16	1	2	19	27	31	45
Total U. S.	25	4	6	12	2	6	11	3	1	70	342	2	5	419	286	80	32	183	25	38	142	50	5	841	747	3426	35	55	3516	3288	4357	4035

month of last year. Of these November tests, 70 or 16.7 percent were successful in finding production and 82 or 16.9 percent produced out of October's total. However, greater success was attained in November, 1945, when 79 tests or 21.4 percent found the mark.

New Oil Discoveries

New oil discoveries totaled 37 in November compared to 59 in the preceding month. These were made up of 25 new fields against 36 and 12 new pay horizons in existing fields against 23. Extensions to oil fields numbered 11 in November against ten in the previous month.

November netted 12 new distillate sources, six fields and six new horizons, against only three, one field and two new pays, for October. Only one distillate field was extended during the two months, that being in November.

Gas discoveries numbered six each in the two months, four fields and two new pay in November and six fields in October. Extensions were made to three gas fields in November, while October had three.

In the first 11 months of the current year there have been 4357 exploratory tests drilled against 4035 in the comparable period of last year, an increase of 8 percent. Of these wells, 841 were successful this year for 19.3 percent against 747 or 18.5 percent last year.

New sources of oil were found by 469 of this year's total wells, these being 286 new fields and 183 new pay horizons, against 292 fields and 141 new pays a total of 433 for last year. Oil field extensions numbered 142 this year compared with 143.

Distillate discoveries numbered 70—32 fields and 38 new pays—so far this year against 41—28 fields and 13 pays—in the last year's 11 months. Five distillate fields were extended in 1946 and six last year.

Gas discoveries numbered 105 in each of the two years. There were 80 new fields and 25 new pays this year compared with 93 fields and 12 pays last year. Attempts to extend gas field production were successful in 50 instances this year, while only 19 found the pay in 1945.

During November, Arkansas netted an oil field extension out of six tests. This was a mile west extension to the Village field in Columbia County. California gained an oil field in the Arvin area of Kern County and extended its Fresno County's Lanare field ½ mile northeast out of 24 wells.

Colorado Strike

A new Weber sand field, Elk Springs, in Colorado's Moffat County was found in November for the state's first discovery this year. It was the only exploratory completion for the month. Illinois gained two new oil fields, one each in Jasper and Wabash counties, new pay horizons in the Trumbull and Browns oil fields of White and Wabash counties, and five oil field extensions out of 62 exploratory wells.

A total of 31 attempts brought Kansas a new flowing oil field in Ellis County, which is one of the state's best discoveries of the year, and a small pumping field in the same county. Kentucky netted a new oil field and an oil field extension in McLane County from 11 tests.

Northern Louisiana, out of 11 tries, found a new distillate field in Franklin Parish, extended production in its Lisbon oil field and its Hico-Knowles distillate field of Lincoln Parish. The coastal part of the state discovered new distillate pays in two of its Terrebonne Parish fields and extended production one mile in the Reddell field of Evangeline Parish. These resulted also out of 11 tests.

Michigan Gas Feld

Michigan gained only a new gas field in Mecosta County out of 17 wells. Seventy-five exploratory tries brought Oklahoma eight new oil fields, of which only the Katie field in Garvin County appears significant, three gas fields, three new oil pay horizons, and ½ mile extensions to the Choate and Wewoka, NE, fields.

Texas, out of 129 exploratory completions, obtained ten new oil fields, five distillate fields, six oil pays, two gas pays, three distillate pays, and extensions to three gas fields. The most important of Texas' discoveries seems to be an excellent yield per acre oil area, known as Henrietta, East, in Clay County, North Texas. A new oil pay in Circle Ridge field, Fremont County, Wyoming, was the only discovery out of four attempts in that state.

Hawkins Rule Upheld

Two applications for writ of error in the Hawkins Townsite case were refused last week by the Texas Supreme Court. The suit was brought by Humble Oil & Refining Company to enjoin enforcement of the Texas Railroad Commission's allocation formula in the Hawkins field of Wood County. The trial court held for Humble, but the Court of Civil Appeals reversed the decision.

The formula, which provides that 50 percent of the field allowable be assigned on a per-well basis and that 50 percent be distributed according to acreage, was attacked on the ground that it discriminates agains Humble and results in the confiscation of its property.

Maps Released

The United States Geological Survey has released three maps in the Oil and Gas Investigations series. Preliminary Map 37, "Geologic map of the Tuscaloosa and Cottondale quadrangles, showing areal geology and structure of Upper Cretaceous formations," by L. C. Conant, D. H. Earlge, W. H. Monroe and J. H. Morris, is available at 55 cents. The scale is 1 inch to 1 mile, and the map covers an area of nearly 500 miles. Preliminary Map 39, "Map of the Berea sand of northern Ohio," by J. F. Pepper, D. F. Demarest, W. DeWitt, Jr., R. D. Holt, and C. W. Merrels II, is available at 65 cents. Sheet 1 is a map covering nearly 8000 square miles, showing productive oil and gas pools; Sheet 2 includes maps, diagrams, cross sections, and text. Preliminary Map 67, "Subsurface maps of the Rangely anticline, Rio Blanco County, Colorado," by N. W. Bass, which shows the structure of the production portion of the anticline by contours, is available at 25 cents. The maps may be obtained from W. E. Wrather, Director of the Geological Survey, Department of the Interior, Washington 25, D. C.

New Oil, Distillate and Gas Fields and New Pay Horizons Discovered in the United States in November, 1946

Also Important Extensions to Established Fields

COUNTY	FIELD	COMPANY, WELL AND LOCATION	Date Spudded	Date Completed	Total Depth (Feet)	Completion Horizon (Feet)	[1]Name, Character and Age of Producing Formation	[2]Initial Production Method and Choke	Gravity of Oil	[3]Structure: [4]Method of Discovery	Tentative Evaluation of Discovery or Extension (Opinion of Relative Importance of Area from General Viewpoint of the Industry Based on Pertinent but Necessarily Incomplete Data: Later Development or More Complete Data Obviously Might Require Revision of this Tentative Opinion).
		ARKANSAS—Oil Field Extension									
Columbia	Village	McAlester Fuel Co.'s J. G. Alexander A-1, ne ne 17-17s-19w, 1 mi w ext.	9- 1-46	11-30-46	7390	4833- 4838	Travis Peak sd; L Cre	P 35; 35 wtr	35		
		CALIFORNIA—New Oil Field									
Kern	.....	Western Gulf Oil Co.'s DiGiorgio 1, nw 10-31s-29e, Arvin area se Mountain View fld.	.....	11-15-46	6163	5935- 6160	Fractured Schist	F 480; 1.7⅝ wtr	31.6	.....	.....
		CALIFORNIA—Oil Field Extension									
Fresno	Lanare	Pacific Western Oil Corp's Brix-Francis Community 1, 16-17s-18e, ½ mi nw ext.	.....	11- 8-46	7150	.....	Temblor sd; Mio	F 300	38.5	.....	.....
		COLORADO—New Oil Field									
Moffat	Elk Springs	Continental Oil Co.'s Margaret Smith 1, nw se sw 30-5n-98w	8- 8-46	11-27-46	6231	6087- 6140	Weber sd; Penn	Sw 443	30	Ant; sur	State's only 1946 disc—established Weber prod outside Rangely fld, 40 mi sw; will lead to further work in Uintah Basin.
		ILLINOIS—New Oil Fields									
Jasper	Boos, E.	Secure Oil Co.'s C. L. Ireland 1, nw nw nw 11-6n-10e	8- 6-46	11-12-46	2673	2657- 2673 2672- 2673	Rosiclare li; Miss McCl sky li; Miss	P 66; 4 wtr	.....	.....	1¾ mi e of n end Boos, N. pl and 1½ mi s Wilow Hill pl.

Wabash	Lancaster Central	Sam Malis et al's W. Fite 1, n ne nw 7-1n-13w	9-28-46	11- 5-46	2824	2813- 2824	Rosiclare li; Miss	F 900	--		Halfway bewt Lancaster and Lancaster, W. pls. Two other wells comp during month for 924 pumping and 820 flowing, and 3 dry holes.
		ILLINOIS—New Oil Pays									
Wabash	Browns	Gilliam & Aspin's H. L. Hering 1, ne ne sw 27-1s-14w	10- 4-46	11-12-46	2971	2935- 2970	Lwr O'Hara li; Miss	P 240 •	....		Also extends pl ¾ mi. Pool produces fr dpr and shallower pays.
White	Trumbull	W. I. Lewis et al's Nibling 1, se sw se 7-5s-9e	10- 5-46	11-12-46	3270	3260- 3257	Rosiclare li; Miss	P 146; 10 wtr	....		Also extends pl ¾ mi to n. Dpr pay than previous prod.
		ILLINOIS—Oil Field Extensions									
Clay	Ingraham, W.	Brinkerhoff Drlg. Co.'s O. A. Barlow 2, se sw sw 11-5n-7e, ½ mi nw ext	10-17-46	11-19-46	2539	2515-	Cypress sd; Miss	P 165	....		
Jasper	Boos, N	J. J. Lynn's Houser-Sears 1, se se nw 21-6n-10e, ¾ mi e ext	10-10-46	11-19-46	2812	2800- 2812	McClosky li; Miss	P 117	....		
Madison	Marine	G. T. Loper's M. Reding 1, nw nw nw 14-4n-6w, ½ mi e ext	10- 2-46	11- 5-46	1793	1753-	Silurian li; Sil	P 80; 170 wtr	....		Offset to n by 200 bbl. well.
Wabash	Maud, N	Hayes & Wolf's L. E. Meyer 1, sw sw nw 8-1s-13w, 1 mi n ext	9-24-46	11- 5-46	2578	2550-	Bethel sd; Miss	P 140	....		2nd well in pl. Pl drlg is centered on well rather than discovery.
Wayne	Clay City Consol.	Nash Redwine's M. A. Brown 1, (OWWO) n nw ne 31-2n-9e, ½ mi ext	6-30-46	11-19-46	3109	3059-	McClosky li; Miss	P 6	....		Previously completed dry in September.
		KANSAS—New Oil Fields									
Ellis	Pleasant, N	J. C. Farley's Wiesner 1, se se se 26-13s-20w, 1 mi nw of Pleasant pl	.....	11-15-46	3815	3808- 3815	Arbuckle li; Ord	P 10	....	Ant; dr	Not important.
Ellis	.....	The Texas Co.'s Dreiling 1, sw sw sw 15-13s-17w, 2 mi s of Catherine pl	.....	11-26-46	3583	3560- 3583	Arbuckle li; Ord	F 559	....	Ant; dr	One of state's best discoveries of yr; should open comparatively large prod area.
		KENTUCKY—New Oil Field									
McLane	.....	Miller and Schiarella's Wiggins 1, 20N-27	.....	11- -46	1645	1595- 1645	Tar Springs sd; Miss	P 85	....		
		KENTUCKY—Oil Field Extension									
McLane	Cleopatra	Sohio Pet. Co.'s Pinkston 1, 7-N-27	.....	11- -46	1750	1735- 1750	Jackson sd; Miss	P 66	....		
		NORTH LOUISIANA—Oil Field Extension									
Claiborne	Lisbon	Hassie Hunt, Tr's Fuller 1, 1391 fr s&wl 33-22n-4w, 1 mi n ext	8-24-46	11-28-46	7914	5160-	Travis Peak sd; L Cre	F 462; ¼"	35		
		NORTH LOUISIANA—New Distillate Field									
Franklin	.....	Atlas O & R Co.'s Ayer Timber Co. 1, sw nw 26-14n-8e, 11 mi e Winnsboro	9- 4-46	11-18-46	7027	.....	Tuscaloosa sd; U Cre	F 15; 4 mln	....		
		NORTH LOUISIANA—Distillate Field Extension									
Lincoln	Hico-Knowles	R. W. Williams' Cooper 1, fr sec sect 25 go 2640 n 1310.5 e to lcn in 25-20n-4w, 1 mi nw ext.	8-28-46	11- 8-46	8432	8280-	Bodcaw sd; Jur	F 113; 1.9 mln; ¼"	....		
		SOUTH LOUISIANA—New Distillate Pays									
Terrebonne	Lake Barre	Texas Co.'s State-Lake Barre Lse 199-45, n 40° 1000 fr well 44, n 51° 04 min e 6290 fr USCGS "Terrebonne" in Lake Barre, 19-21s-20e.	5- 6-46	11- 3-46	14021	11900-11930	Sd; Miocene	F 23; .7 mln; 1/8"	50.3	Piercement type SD	Prod small, little additional development seen.
Terrebonne	Lirette	Humble's LaTerre Co. 5, fr nec sect 32, sly alg el 990 th wly parallel to nl 330 to lcn in 32-19s-19e.	10-21-46	11-27-46	10580	9606- 9624	Miocene sd; Mio	F 84; 6.3 mln; ¼"	51.6	Dp D	
		SOUTH LOUISIANA—Distillate Field Extension									
Evangeline	Reddell	Continental's Pardee Co. 7, 1650 n&w fr sec sect 17, lcn in 17-4s-1w, 1 mi ne ext.	10-17-46	11-29-46	10040	9335-10001	Sparta sd; Eoc	F 216; 1.8 mln; 1/16"	52.1	Dp D	Important extension.
		MICHIGAN—New Gas Field									
Mecosta	New Morton	Mich. Consolidated Gas Co.'s Stickler 1, c sw 15-14n-8w 3 mi se Austin fld	10-25-46	11-27-46	1282	1280- 1282	Michigan Stray sd & li; Miss	1.6 mln	....	Ant; geol	
		OKLAHOMA—New Oil Fields									
Cotton	Soldier Crk, N.	Martin Properties' Dyer 1, sw se 33-2s-11w, 1 mi n Soldier Creek fld	.....	11-14-46	1652	1650- 1652	Pennsylvanian sd; Penn	P 25	....	Str trp; dr	Opens sml pl, and typical of shallow pay wells in area.
Garvin	Katie	Carter Oil Co.'s Burford 1, nw nw nw 5-1n-1w, 1½ mi ne Katie town	.....	11-11-46	7905	6070- 6088	Hoxbar & Deese sds; Penn	F 463	44	Ant; dr	Opens good prod fld 6 mi n of Hoover, NW fld.
Hughes	Holdenville, E.	B. C. Deardorff's Miller 1, se se se 5-7n-9e, 1 mi e of Holdenville pl	.....	11- 4-46	2882	2858- 2882	Booch sd; Penn	P 60	38	Str trp; dr	Proves pl in area that was overlooked by operators seeking deeper pays.
Hughes	.....	Sherrod & Apperson's Barnard 1, se sw ne 23-8n-8e, 1 mi sw Holdenville town	.....	11-19-46	3296	3284- 3296	Wapanuka (Union Valley) li; Penn	P 60	....	Str trp; dr	In ar that has seen several sml pool-openers; shallow pays passed up in past.
Okfuskee	.....	Mid-Continent Pet. Corp.'s Baker 1, se ne nw 31-12n-7e, 1½ mi e Keokuk pl	.....	11-18-46	4361	2925- 2945	Prue sd; Penn	P 60	29	Str rtp; dr	Proves shallow sd prod in ar. Well originally was to try for Hunton li at 4350 ft.
Pottawatomie	.....	James Wise's State 1, ne ne nw 16-10n-5e, 1 mi s of Earlsboro, N. pl	.....	11-11-46	4754	3805- 3817	Earlsboro sd; Penn	P 32	36	Str trp; dr	Not significant.
Seminole	.....	George W. Hassell's Davis-Patterson 1, ne se nw 29-7n-6e, 1 mi n of Dora pl	.....	11-20-46	2417	2400- 2417	Calvin sd; Penn	P 10	....	Str trp; dr	Not important.
Seminole	.....	Sam Rhoades' Letka 1, ne ne ne 32-8n-7e, 1 mi n of Little, E. pl	.....	11-18-46	3294	3278- 3294	Cromwell sd; Penn	F 105	36	Str trp; dr	Opens sml pl, but has indications of good prod.
		OKLAHOMA—New Oil Pays									
Hughes	Holdenville, E.	B. C. Deardorff's Miller 1-A, se se se 5-7n-9e. (Twin well to Miller 1)	.....	11-20-46	915	880- 914	Calvin sd; Penn	Sw 131	....	Str trp; dr	Discovery well, Miller 1, prods fr dpr Booch sd.
McClain	Wayne, SW	J. E. Trigg et al's White 1, nw sw se 24-5n-2w	.....	11-19-46	6752	6606- 6630	Hunton (Bois d'Arc) li; Devo-Sil	F 30	....	Ant; dr	Other wells prod fr Pennsylvanian sds.
Payne	Mehan, NW	Fleet Drilling et al's Ball 1-A, ne ne sw 10-18n-3e, nw old Mehan fld	.....	11- 4-46	3954	3931- 3948	Bartlesville sd; Penn	P 60	....	Ant; dr	Not important.
		OKLAHOMA—Oil Field Extensions									
Cotton	Choate	William Ungerman's Campbell 1, sw sw nw 4-4s-10w, ½ mi ne ext	.....	11- 4-46	1398	1389- 1394	Pennsylvanian sd; Penn	F 110	35	Str trp; dr	
Seminole	Wewoka, NE	R. W. Brown's Fore 1, sw ne nw 16-8n-8e, ½ mi n ext	.....	11- 7-46	3999	3988- 3999	Misener sd; Penn	F 100	....	Ant; dr	
		OKLAHOMA—New Gas Fields									
Okfuskee	Bigham	Ralph Fillmore, II's Palmer 1-A, cse nw 34-11n-10e, 6 mi se Okemah town	.....	11-24-46	3123	3069- 3091	Gilcrease sd; Penn	F 1.6 mln	....	Str trp; dr	Opens gas prod in 700 acre area.
Okmulgee	.....	A. R. Jordan's Miller 1-A, sw sw sw 23-15n-13e, 1 mi s of Natura dist	.....	11-20-46	1797	1518- 1527	Booch sd; Penn	F 1.5 mln	....	Str trp; dr	Of no great importance.
Pontotoc	.....	W. B. Pine Estate's Doner 1, se ne sw 19-5n-7e, 4 mi e of Tyrola, E. fld	.....	11- 1-46	3730	1425- 1502	Thurman sd; Penn	F 0.5 mln	....	Str trp; dr	Little significance, other than sml shallow gas pl.
		EAST TEXAS—New Oil Field									
Leon	Flynn	Claude Bell et al's B. W. Browne-Carson 1, 4710 ft of swl & 5278 ft se of nwl of Thos. H. Garner sur.	6-28-45	7-20-46	7303	7185- 7303	Woodbine sd; U Cre	P 8	34.8	D; geol	Lge prod ar confirmed by 2 outlying wells being completed with natural fl. Prod fr thin streaks broken sd and shale. Most southerly Woodbine prod in dist.
		NORTH TEXAS—New Oil Fields									
Archer	.....	Staley Oil Co.'s V. D. Powell 2, 275 ft nsl and 1225 ft wel of e 100-ac tr and J. M. Armstrong sur A-763, .. mi e prod, but separated by failures.	10-26-46	11- 4-46	942	938- 942	Cisco sd; Penn	P 10	40	Ant; geol	Not important; in cluster of failures.
Clay	Henrietta, E	Jack Grace et al's Bryant Edwards 1-C, 1305 ft w and 1891 ft n of swc blk 34, Marion CSL sur, but in S. C. Beldon sur, A-12, 2½ mi nw of Hapgood pl.	10-17-46	11-20-46	6088	6070- 6088	Bend cgl; Penn	F 1800; 1"	45	Ant; geol	Formation and depth similar to Hapgood 3-well pl; both involve local features on flk Worsham "high" and other strikes probable; sml ar but excellent yield per acre.
Cooke	.....	Hollandsworth Drlg Co.'s H. E. King 1, 150 ft out of nwc of 40-ac lse, or 750 ft nsl and 150 ft ewl of 253.6-ac tr, M. Langham sur, A-564, ⅞ mi se of prod.	10-20-46	11- 1-46	1010	1005- 1010	Cisco sd; Penn	P 10	....	Ant; geol	Near failures and sml in area.
Wilbarger	Tolbert	National Associated Pet. Co.-The Texas Co.'s J. D. Crouch 1, nw nw ne H&TC Ry, 24, blk 16, 6 mi sw of Odell fld.	9-29-46	11-14-46	5612	5015- 5039	Canyon (Palo Pinto) li; Penn	F 129; 1/16"	41.7	Ant; geol	Sml prod ar requiring acid treatment for natural fl; gasoil ratio and reservoir press low.
		NORTH TEXAS—New Oil Pay									
Wichita	Madden	Consolidated Oil Co. et al's H. H. Wade 2, 990 ft snl and 2041 ft ewl Labor 6, Lge 2, Denton co schl lds, 660 ft s of 4200-ft Strawn prod.	11-12-46	11-18-46	1328	1297- 1328	Cisco sd; Penn	P 62; 48 wtr	42	Ant; geol	Shallow oil restricted to s flk multi-pay deep ar.

New Oil, Distillate and Gas Fields and New Pay Horizons Discovered in the United States in November, 1946

Also Important Extensions to Established Fields

COUNTY	FIELD	COMPANY, WELL AND LOCATION	Date Spudded	Date Completed	Total Depth (Feet)	Completion Horizon (Feet)	[1]Name, Character and Age of Producing Formation	[2]Initial Production Method and Choke	Gravity of Oil	[3]Structure: [4]Method of Discovery	Tentative Evaluation of Discovery or Extension (Opinion of Relative Importance of Area from General Viewpoint of the Industry Based on Pertinent but Necessarily Incomplete Data: Later Development or More Complete Data Obviously Might Require Revision of this Tentative Opinion).
		WEST CENTRAL TEXAS—New Oil Fields									
Runnels	.....	Geochemical Surveys, Inc. & W. R. Ransome et al's J. W. Harris 1-A, 695 ft snl and 2230 ft wel of 184-ac tr and J. V. Cabrera sur 514, 8 mi ne prod.	8-24-46	11- 9-46	4085	3900- 3920	Strawn (Gardner) sd; Penn	F 59; 2″	42	Ant; geol	E offset to failure; will require pump to make allowable.
Shackelford	.....	Roeser-Pendleton, Inc's W. I. Cook 1-B-90, 1594 ft snl and 220 ft ewl E. T. Ry. sur, Sect 90, 1 mi e prod.	10-21-46	11- 9-46	1328	1311- 1328	Fry sd; Penn	P 90	38	Ant; geol	Nearby failures restrict prod to sml area.
		WEST CENTRAL TEXAS—New Oil Pay									
Palo Pinto	.....	Palo Pinto Oil & Gas Co.'s Wesley Roberson 1, 3770 ft snl and 660 ft ewl T&P Ry, 53, blk 2, near gassers and 5 mi w of Bend oil prod, nearest.	9-15-45	8-13-46	3886	3877- 3886	Marble Falls sd; Penn	F 24; .8 mln 11/16″	38	Ant; geol	Gasoil ratio 33,333/1; allowable 2 bbls dly. Stray oil pay for area.
		WEST TEXAS—New Oil Field									
Ward	Sealy S.-Yates	Stanolind Oil & Gas Co.'s University 2-Y, c sw nw sect. 13, blk 16, 3/5 mi s by w of lime area.	8-26-46	10-23-46	2800	2700- 2800	Yates sd; Perm	F 131; 20 wtr; 1/4″	28	Reef; geol	Narrow prod area with accumulation in Yates reef that trends n-s betwn li areas.
		WEST TEXAS—New Gas Pay									
Andrews	Block 12	The Texas Co.'s University 2-T, c ne se sect 22, blk 12, se edge Clear Fork prod.	10-17-46	11- 4-46	2950	2799- 2950	Yates sd; Perm	2.7 mln; 2″	....	Ant; geol	Comp as shallow gasser to forestall lse expiration. No commercial market for gas.
		UPPER TEXAS COAST—New Distillate Field									
Chambers	.....	Standard of Tex.'s State-Galveston Bay 1, Mineral Lse 27129, 660 fr swl 1320 ft sel sect 201 Galveston Bay, on 640-ac lse, 1 mi ne Red Fish Reef, sw Smith Point prod.	8-10-46	10-31-46	11390	8752- 8756	Frio sd; Olig	F 288; 1/4″	53.6	.....	May prove to be ext of Red Fish Reef pl.
		UPPER TEXAS COAST—New Distillate Pays									
Colorado	Altair	Superior's Mrs. Myra S. Pryor 4-A, begin nwc P. O'Daugherty sur go 1390 s alg swl th 1565 sw at ra to lcn, 800-ac lse, BBB&C sur.	9-10-46	11- 5-46	10366	10174-10192	Wilcox sd; Eoc	F 117; 4.6 mln; 1/4″	50	Ant; refl seis	.....
Tyler	Hyatt, S.	Atlantic's J. R. Dempsey 1, 467 fr wl 660 fr sl 22.51-ac lse, 660 fr sl 330 fr wl B. A. Beard sur, 3100 w sw of disc well.	3-30-46	10-25-46	10326	10238-10300	Wilcox sd; Eoc	F 84; 4.3 mln; 1/4″	51.4	Ant	Important new deep sand.
Wharton	Withers	Texas Co.'s Pierce Est. 122-C, 4299 fr sel 467 fr swl 4488-ac "C" lse, John Caldwell sur.	7-25-46	11- 3-46	8466	6650- 6670	Frio sd; Olig	F 13; 3.7 mln; 7/16″	53	Dp D	Unimportant.
		LOWER TEXAS COAST—New Oil Fields									
Live Oak	.....	Roxie Wright et al's S. F. Beall Est. 1, 660 fr nwl 2640 fr nel 900-ac lse, 660 fr nwl 13,000 fr swl of W. J. Cannon sur, 3 mi s sw Mt. Lucas fld, 3½ mi e ne Hinnant fld.	9-27-46	11-16-46	6658	5580- 5585	.....	F 50; 3/32″	43	.....	.....
San Patricio	Round Lake	Hewit & Dougherty-Lonnie Glasscock's W. A. Jennings 1, 660 fr n&wl blk 3, C. C. Smith sbdn and 87.8-ac lse, John McMullen sur, 1¼ mi e se Gallagher fld.	10-20-46	11-19-46	5869	5440- 5456	.....	F 32; 1/4″	38.7	.....	.....
		LOWER TEXAS COAST—New Oil Pays									
Brooks	La Gloria	Argo Oil Corp's Birdie B. Riley 3-A, 360 fr el 1320 fr sl 99.8-ac lse, lot 13, blk 8	6-26-46	11- 4-46	7406	6961- 6971	Frio sd; Olig	F 305; 1/2″	43.4	Ant	Excellent new sand.
Goliad	Cabeza Creek	Continental's J. E. Petus et al 11, 6630 se alg nel fr n cor Sebastinao Vela sur th 660 at ra to lcn in 3696-ac lse.	10-15-46	11-22-46	7845	4528- 4533	Pettus sd; Eoc	F 191; 11/64″	46.1	Flt	Additional development foreseen.
Jim Wells	Tijerina-Canales	Texas Co.'s H. C. de Tijerina 37, 2338 fr nl 3000-ac lse, 6182½ w of el sur 270, in A. Canales sur 360.	10- 1-46	11-10-46	7600	6990- 6995	Frio sd; Olig	F 54; 3/32″	42.5	Flt	Some additional development seen.
Nueces	Agua Dulce	L. M. Lockhart's F. & G. Prochaska 1, 660 fr s&el 460-ac lse, V. L. de Herrera gr, 4700 ne Lockhart's Herrman 2, 3600 n ne Herrman 3.	.....	11-24-46	6858	5110- 5124	Frio sd; Olig	F 146; 3/32″	36	Ant	Imp. new sd in this Frio-Vicksburg trend fld. Also extends fld 2/5 mi ne.
		LOWER TEXAS COAST—New Distillate Fields									
Hidalgo	Landa	Stanolind's Harry Landa 1, 3425 fr el & 8600 fr sl of Del Gato gr, 6 mi sw Donna.	7-14-46	11-20-46	9512	8380- 8396	.....	F 70; 3 mln; 3/16″	55	.....	Some additional development seen.
Kleberg	.....	Sun's E. G. Canales 4, 660 s of nl 3294-ac lse 4643 w of el CCSD&RGNG sur 339, 1⅔ mi se Tijerina-Canales fld.	.....	11-10-46	11554	10225-10251	.....	F 130; 9 wtr; 5.9 mln; 1/4″	....	.....	.....
Refugio	.....	Wil-Tex Oil Corp.-Herman E. Brown's Jamie Hynes 1, 2335 s of middle nl 3375 fr ely/el 814-ac lse, M. Arocha sur, 1 mi nw old Refugio fld.	7- 9-46	11-10-46	7453	6480- 6482	.....	F 450; 18 mln	....	.....	.....
Willacy	.....	Magnolia's F. Armendaiz 2, 5350 fr nl 6540 fr el 8248-ac lse, San Juan de Carricitos gr, 9 mi ne San Dominio, 6½ mi se Willamar fld.	6-16-46	11- 1-46	9707	8585- 8600	.....	No gge; 13 mln	....	.....	Unimportant.
		LOWER TEXAS COAST—Gas Field Extension									
Kleberg	Borregas	Humble's King Ranch-Borregas 3, 5138 nw of well 1, disc, on 40,591-ac lse, 38,669 fr el 36,000 fr nl Sta. Gertrudis gr.	.....	11-15-46	8383	.....	.....	No gge	....	.....	Ran serveral D. S. tests, will comp in undecided zone later.
		SOUTHWEST TEXAS—New Gas Pay									
Jim Hogg	Patel	Newman Bros. Drlg. Co. et al's Julian V. Pena 1, (OWWO) 330 fr s&el lot 32, M. W. White sbdn, Mrs. L. Bartlett sur 589, El Peyote gr, 40-ac lse.	10-19-46	11- 7-46	2977	1576- 1583	.....	No gge, 3/16″	....	.....	Unimportant.
		SOUTHWEST TEXAS—Gas Field Extensions									
Duval	Palangana	H. H. Howell's Wm Singer Est. 1-A, 330 fr n&wl 80-ac lse, 2264 fr el 3420 fr sl G. Cumberland sur 4, 3350 sw Howell's Singer 3, gas disc on e flk Palangana salt dome, 2/5 mi sw ext.	11- 7-46	11-15-46	1940	1650- 1673	Upr Miocene sd; Mio	No gge	....	SD	Unimportant.
Duval	Seven Sisters	Hickok & Reynolds' J. F. Welder Heirs 8-C, 990 fr nl 330 fr el 540-ac lse, 4950 fr wl 6270 fr nl S. Alexander sur 102, 1 mi w ext.	11-12-46	11-30-46	3110	2521- 2527	Loma Novia sd; Olig.	F 3.8 mln	....	Flt	Unimportant.
		WYOMING—New Oil Pay									
Fremont	Circle Ridge	Continental Oil Co.'s Shoshone 4, se sw nw 6-5n-2w	7- 5-46	11-18-46	2864	1285- 1975	Madison li; Penn	Sw 125	23.8	Ant	Black asphalt base crude, market outlet fair.

[1] Character of producing formations abbreviated thus: ch, chalk; dolo, dolomite; li, limestone; sd, sandstone; sh, shale; ser, serpentine; cgl, conglomerate. Ages of formations abbreviated thus: Pleis, Pleistocene; Plio, Pliocene; Mio, Miocene; Olig, Oligocene; Eoc, Eocene; U. Cre, Upper Cretaceous; L. Cre, Lower Cretaceous; Jur, Jurassic; Tri, Triassic; Perm, Permian; Penn, Pennsylvanian; U. Miss, Upper Mississippian; L. Miss, Lower Mississippian; Devo, Devonian; Sil, Silurian; Ord, Ordovician; Cam, Cambrian.

[2] Barrels of oil per day (24 hr. rate), flowing (F), pumping (P), swabbing (Sw), or bailing (B); or million cubic feet of gas daily open flow capacity; size of choke given in inches.

[3] Type structure abbreviated as follows: Ant, Anticline; D, Dome; Fld, Fold or Folded; Flt, Fault or Faulted; M, Monocline; N, Nose; SD, Salt Dome; Str trp, Stratigraphic trap; Syn, Syncline; Ter, Terrace.

[4] Method of discovery abbreviated as follows: cd, core drilling; dr, drilling; geol, geology; geop, geophysics; grv, gravity meter; ran dr, random drilling; seis, seismograph; sub, subsurface geology; sur, surface geology; tb, torsion balance.

Completions Below October Total

THE number of wells completed during November dropped slightly from the previous month, but showed an increase when compared with the same month of last year. The overall total of wells completed in the first 11 months of the year continued to hold a considerable lead over last year's, and should end the year with about a 13 percent advantage.

Shortages of materials and equipment, results of industrial strikes and lack of adequate transportation retarded the year's drilling program to some extent. These, however, have been mostly offset by the newer and improved equipment that has become available since the war's end and the return of many experienced men from military service. Results of these improved field conditions are being reflected in the increased ratio of wells drilled per operating rig. In other words, more wells are being completed with fewer drilling units.

During November there were 2521 wells completed against 2760 in October, a drop of 239. However, when compared with 2226 completed in November of last year, an increase of 295 is shown. This comparison with last year's month is not quite a true picture, as some differences in time bases used for the two periods exists. Data for the current November was compiled on a calendar month basis, or 30 days, while last year's was based on four weeks, or 28 days. An accurate comparison is obtained by breaking the totals down to daily averages of 84 wells for November and 79 for the earlier period.

So far this year 27,999 wells have been drilled against 24,744 in the same 11 months of 1945, an increase of 3255 or 13.2 percent. As this year is almost over, it is now quite evident that it has made much progress toward normalcy in drilling. Even if the final month does no better than equal last December's figure, the year's total will exceed 30,000 wells, which will be only slightly behind the 30,500 averaged in the five years immediately preceding the war.

At the end of November there were 3767 rigs actually drilling, 370 in process of rigging up preparatory to drilling, and 414 temporarily shut down, for a total of 4551 operations. This was an increase of 141 over the 4410 reported at the end of the previous month, but 206 less than the 4757 operations at the end of November of last year.

*Well Completions in the United States During November, 1946, and Cumulative for Year

(Figures compiled from weekly reports of Oil Weekly staff, with following exceptions: Illinois from Illinois Geological Survey; Indiana from Indiana Division of Geology; Missouri from Missouri Geological Survey; Bradford, Kane-Clarendon, Kane to Butler, and Allegany fields of Pennsylvania and New York from The Producer's Monthly.)

State or District	MONTHLY COMPLETIONS, November, 1946									Total Completions				CUMULATIVE TOTAL COMPLETIONS January-November				DRILLING OPERATIONS AT END OF MONTH					
	New Wells								Total Drld Dpr.									November, 1946				Oct., 1946 Total	Nov., 1945 Total
	Oil	Dist.	Gas	Dry	Wtr. Input	Gas Input	Wtr. Disposal	Total New		Nov., 1946	Oct., 1946	Nov., 1945	Footage Nov., 1946	Wells 1946	Wells 1945	Percent Diff.	Footage, 1946	Dr.	R.U.	S.D.	Total		
Alabama	1			1				2		2	1	5	6,620	16	36	— 55.6	65,631	1	1	4	6	10	7
Arizona											1			2			6,259						
Arkansas	10		2	6				18	1	19	15	14	72,313	176	175	+ 0.6	669,242	28		5	33	33	47
California	120		6	24				150	5	155	164	133	630,738	1,742	1,965	— 11.3	7,302,712	223	48	35	306	285	316
Colorado	15							15		15	16	3	96,446	150	44	+240.9	958,113	46	3	3	52	65	79
Florida				3				3		3	1	1	11,148	25	14	+ 78.6	168,405	5	3	1	9	8	8
Georgia														2	6	— 66.7	8,441						
Illinois	109		1	103				213	1	214	215	170	548,076	2,165	1,746	+ 24.0	5,417,579	250	27	23	300	260	255
Indiana	16			19				35		35	57	22	65,441	466	310	+ 50.3	815,175	45	17	6	68	66	70
Iowa															1	—100.0				1	1	1	
Kansas	77		42	59			1	179	6	185	196	153	569,013	1,995	1,583	+ 26.0	6,221,909	257	21	9	287	290	305
Kentucky	25		8	35				68	1	69	58	70	107,193	630	607	+ 3.8	1,039,167	42	16	5	63	64	76
Louisiana	67	11	6	42		1		127		127	135	103	770,204	1,300	984	+ 32.1	8,042,239	164	11	10	185	161	211
North Louisiana	36	5	6	19				66		66	79	56	228,983	736	405	+ 81.7	2,991,163	69	4	6	79	76	99
South Louisiana	31	6		23		1		61		61	56	47	541,221	564	579	— 2.6	5,051,076	95	7	4	106	85	112
Maryland																		1			1	1	
Michigan	15		7	29				51		51	71	68	107,076	725	714	+ 1.5	1,621,046	74	15	14	103	108	140
Mississippi	11		1	15				27		27	28	29	176,793	229	351	— 34.8	1,644,091	63	4	4	71	67	48
Missouri											2	3		24	48	— 50.0	19,530				†	2	8
Montana	5		5	6				16		16	26	23	40,862	247	227	+ 8.8	585,520	37	4	15	56	61	74
Nebraska				2				2		2		1	7,183	5	4	+ 25.0	12,799	2	1	1	4	4	4
New Mexico	25		5	7				37		37	37	28	156,397	421	395	+ 6.6	1,579,578	89	6	12	107	99	108
New York	56		1	3	32			92		92	86	100	133,691	1,064	1,054	+ 0.9	1,493,676	82	11	20	113	107	128
North Carolina														5	1	+400.0	10,054	1			1		
Ohio	11		51	36				98	2	100	153	102	291,258	1,210	950	+ 27.4	3,102,891	212	19	14	245	258	237
Oklahoma	189		12	105		7	1	314	7	321	398	204	903,627	2,984	2,159	+ 38.2	9,328,561	476	37	14	527	514	529
Oregon														2			17,148						
Pennsylvania	120		57	19	102	24		322	5	327	319	312	558,377	‡3,827	‡3,693	+ 3.6	6,506,830	236	30	52	318	313	321
South Dakota				2				2		2			3,855	3	1	+200.0	8,038	1		3	4	3	
Tennessee												1		2	4	— 50.0	1,618				†	†	1
Texas	369	15	37	210	2	1	2	636	7	643	690	597	2,865,353	7,693	6,757	+ 13.9	32,817,133	1,040	63	99	1,202	1,139	1,227
E. Tex. Border	5		11	1				17		17	24	19	97,850	179	113	+ 58.4	1,059,032	22		1	23	32	53
Rest of E. Tex.	14		1	13			1	29	1	30	38	28	163,514	486	229	+112.2	2,488,881	48	7	11	66	61	74
North Texas	91		2	70	2			165	2	167	176	147	438,105	2,130	1,644	+ 29.6	5,404,789	167	8	9	184	154	201
W. Central	16		3	22				41		41	61	42	102,739	613	439	+ 39.6	1,589,879	81	7	31	119	122	107
West Texas	128		2	29				159	3	162	172	125	784,475	1,697	1,601	+ 6.0	8,182,520	406	8	14	428	430	423
Panhandle	9		5	3				17		17	18	42	50,860	326	558	— 41.6	914,968	87	4	7	98	90	91
Upper Coast	25	7	3	24			1	60		60	58	50	445,326	632	648	— 2.5	4,527,544	76	7	5	88	85	92
Lower Coast	60	7	6	19		1		93		93	87	104	589,338	1,060	989	+ 7.2	6,670,229	104	15	8	127	99	132
Southwest	13		3	21				37	1	38	40	33	129,099	404	448	— 9.8	1,359,911	28	4	3	35	38	34
S. Central	8	1	1	8				18		18	16	7	64,047	166	88	+ 88.6	619,380	21	3	10	34	28	20
Utah											1			5			14,329	4		1	5	7	9
Virginia														2			5,370						
Washington														1	1		6,230						
West Virginia	9		44	12				65		65	74	60	178,220	731	735	— 0.5	1,975,922	336	29	55	420	426	440
Wyoming	9		1	4				14		14	16	24	55,724	150	179	— 16.2	619,027	52	4	8	64	58	109
Total U. S.	1,259	26	286	742	136	33	4	2,486	35	2,521	2,760	2,226	8,355,608	27,999	24,744	+ 13.2	92,084,263	3,767	370	414	4,551	4,410	4,757

* Effective with data for September, 1946, figures are on calendar month basis. Previously, all statistics were for 4-week and 5-week months, explained when published.
† Data not available. ‡ Revised to include part of Kane-Butler, not previously recorded.

Power Distribution Systems
FOR OIL FIELD PUMPING

By W. C. BLOOMQUIST and J. N. POORE
General Electric Company

SINCE voltage regulation in secondary lines determines the number of wells that can be served from a substation, any method of improving the regulation should be considered. The three methods of accomplishing this are (1) larger conductor size, (2) power-factor improvement, and (3) increase in system voltage. The first method is generally uneconomical; the choice between the latter two is one of economics.

There has been some thought given to introducing a new voltage level in the industry . . . a 762 to 830-volt system which corresponds to the wye of 440 and 480 volts. The voltage drop at 762 volts is 1/3 that of a 440-volt system for a given load and power factor, conductor size, and spacing. Such a large reduction is extremely important if it can be economically justified.

If a 762 to 830-volt system is to be used, all components including motors, control, and line equipment should be insulated for the full line-to-line voltage. This means, in general, special design and insulation and an increased cost over that of mass-produced standard 440-volt equipment. Furthermore, there are other intangible disadvantages, such as spare stocks, availability of equipment, lack of interchangeability with standard 440-volt equipment, etc. The introduction of another system voltage level with all its complications industry-wise should be given very careful consideration.

However, it is generally proposed to use standard 440-volt equipment, modified by connection arrangement, for operation at 762 to 830 volts. The 440-volt equipment, built in accordance with industry standards, has an insulation level for 600 volts maximum. To operate 440-volt equipment at 762 to 830 volts, and even higher if the voltage varies, is stressing equipment beyond its rating and, therefore, a definite hazard to life and property. It can be expected that equipment failures will increase. Although oil companies are not bound by the National Electrical Code, these rules set forth "good practice" and any contemplated departure from them should receive thorough investigation.

It is true that if the motor is wye connected the operating voltage of a winding may be 440 volts but the *phase-to-phase* voltage will be 762 volts, or above rating. Generally, the transformer wye connection would be "grounded"; but it is doubtful that in oil field terrain the usual ground connection is of sufficiently low impedance to be classified as a solid ground (as considered for the design and operation of grounded equipment). There is a false security of safety in assuming a voltage of 440 to 480 volts when in reality the voltage is 762 to 830 volts. The poorer the ground connection, the more the likelihood of the "ground" potential approaching the line voltage value with greater hazard to personnel.

Transformer banks connected delta primary and wye secondary (or vice versa) with individual fuses in each primary line for transformer protection require three overload elements in the motor starter for proper motor protection instead of two elements supplied in the standard motor starter.

The delta-wye transformer connection of single-phase transformer banks is also undesirable, because power is not available if one transformer must be taken out of service.

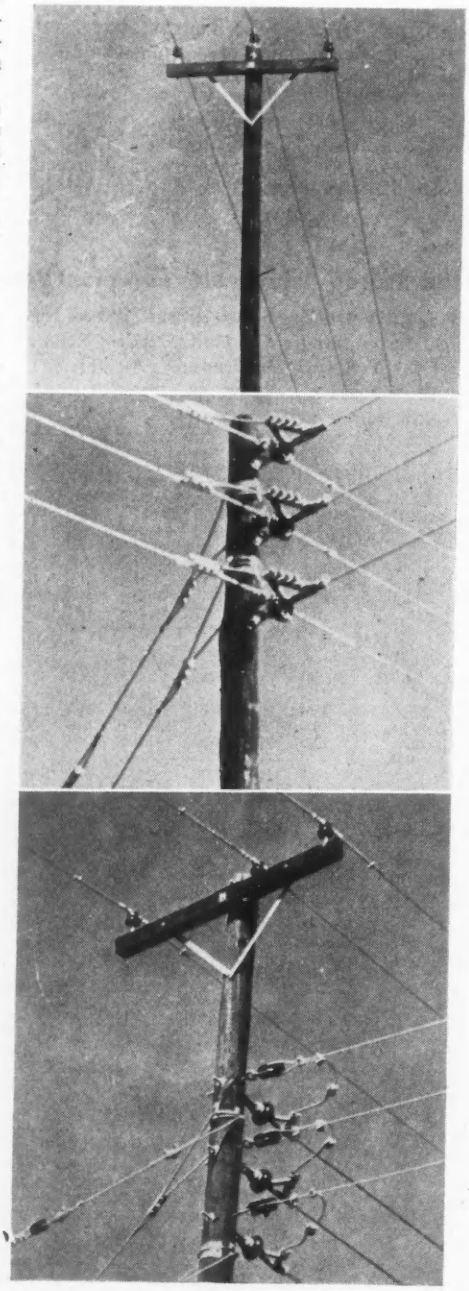


Figure 6 (top). Typical "P" pole and line construction for primary feeders.

Figure 7 (middle). Typical "S" pole and line construction for 440-volt feeders.

Figure 8 (below). Typical "P" and "S" pole and line construction.

Cost Comparison

An actual oil field lease was laid out for a cost comparison between the 440-volt and the 762-volt systems. This lease involved the electrification of 50 wells and was favorable to the 762-volt system due to long and irregular well spacing and large motor loads. The comparison was on an equal basis, i.e., full voltage rating of equipment (not 440-volt equipment operated at 762 volts), and included the entire distribution system, motors, and control on an installed basis.

Cost Comparison of Power Systems, Including Motors and Control

440-volt system with capacitors	100%
440-volt system without capacitors	105%
762-volt system with capacitors	107%
762-volt system without capacitors	108%

Cost Comparison of Power System Only, Excluding Motor and Control

440-volt system with capacitors	100%
440-volt system without capacitors	107%
762-volt system with capacitors	96%
762-volt system without capacitors	97%

Even though the 762-volt system is favored as far as the cost or the distribution system only is concerned, the difference is so small that it is doubtful whether the non-standard voltage would be selected. The slight difference in cost between the 762-volt system with and without capacitors is due to the fact that the main reduction in voltage drop was obtained by an increase in the voltage level.

Before choosing the non-standard 762-volt system, the 440-volt system with capacitors should be carefully investigated. If advantage is taken of transformer-tap settings there will be very few cases to justify the non-standard voltage for present-day well spacings.

Cost Data

The various cost data listed in the tables are for estimating purposes only and are believed to be sufficiently accurate to arrive at an approximate total installed cost of a power-distribution system. These cost data are for material, equipment, and labor for the period 1944-1945, for construction in the Southwestern area during summer weather conditions and include a percentage for overhead. To adjust the labor costs for other areas or other periods, assume the labor content as one-third of the total. The "Construction Costs" issue of the *Engineering News-Record* has labor rates for all areas in the country and a labor index for various years.

These data will permit quick cost comparisons of various alternative layouts and are useful at arriving at the most

SERVICE

Part 2

The 440-Volt vs. the 762-Volt System

economical layout. Then, accurate costs can be compiled for the selected arrangement.

For final construction costs for budget purposes enlist the services of a reliable oil-field contractor.

If the cost of electrification seems too high, enlist the services of a reliable oil field contractor for a preliminary survey and check. This may be worth many times the cost of the service, especially now with a fluctuating labor market. The contractor knows about grading of conductor sizes, the type of conductor to use, and the best pole spacing for the particular terrain. *The real saving and possibility of reduction in cost of electrification is in the distribution system.*

The total cost of the distribution system will be based on the following component parts for the cost data given in the tables:

1. Pole types.
2. Conductors, including stringing and sagging.
3. Transformer sub-stations.
4. Capacitor equipment, if used.
5. Add 10 percent to the above total. This takes care of such miscellaneous items as surveying for the distribution lines, trucking, and other items incidental to installation.

Pole Costs

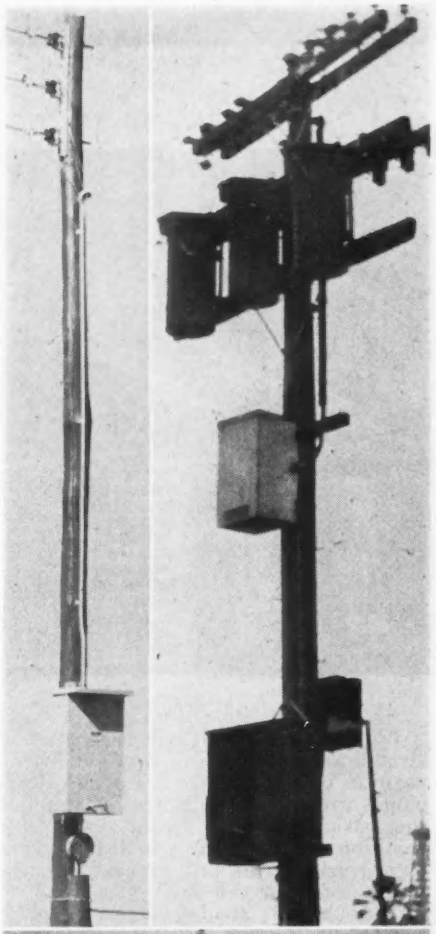
A few of the most common types of pole arrangements are shown in Figures 6, 7, 8 and 9. It is only necessary to use the cost of these four basic pole types to arrive at the total cost, even though other types of pole construction actually will be used in an installation. The cost of guying, anchoring, dead ends, laterals, etc., have been factored into these costs. Digging costs include an average for holes dug in both dirt and rock.

The cost of the "M" pole includes mounting the motor starter, connecting line wire, etc., from the secondary "S" pole, suitable cable or conduit from the top of the pole to the starter and underground cable from the motor starter to the motor. The cost of an "M" pole should be included for every motor, even though the "M" pole may not be used at every location in the actual installation.

Transformer Substation

There are a variety of sub-station arrangements and designs, depending upon personal preference and local rules and practices. Generally, and especially true in the utility industry, transformer banks up to 45 kva and sometimes up to 75 kva, are pole-mounted on cross arms. Above 45 to 75 kva a double-pole and platform arrangement is used or else the transformers are located on the ground. Two hundred and twenty-five kva is a good dividing line in deciding between platform and ground mounting of transformers. A typical sub-station arrangement is shown in Figure 10.

Because there are so many variations in sub-station arrangements which may influence the cost, the cost of transformers, cutouts, and lightning arresters are segregated.



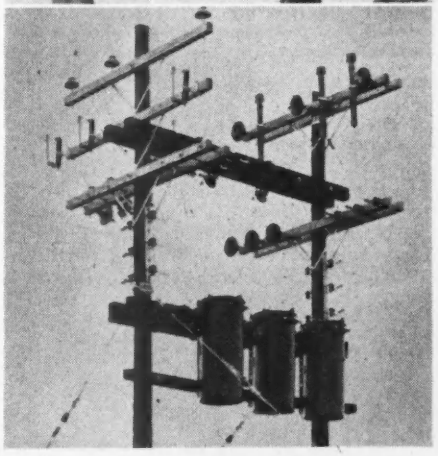


Figure 9 (top left). Typical "M" pole showing termination of 440-volt overhead feeder and location of motor starter.

Figure 10 (below). Typical sub-station construction for oil field power distribution system, showing three 25-kva, single-phase transformers, with fused cutouts and lightning arresters. Primary lines are 12-kv and secondary lines are 440 volts.

Figure 11 (top right). Installation showing several equipments on a single pole. Top to bottom: Three 15-kva transformers with fused cutouts, 2300-volt combination disconnect switch and interlocked recptacle, two 10-kvar capacitors, and box containing motor starter and fusible switch for plugging in portable mast lights.

Lightning arresters were selected for ungrounded service. Unless the incoming source is solidly grounded at or near the lease, it is doubtful that arresters for grounded service can be applied.

Sometimes it is possible to reduce costs by combining the transformers, motor starter, and capacitors in a single substation arrangement, as shown in Figure 11. In this illustration it will be noted that there is also a 2300-volt switch-and-plug receptacle box located between the transformers and the motor starter. This outlet box provides primary power for various, large portable equipments, such as pulling machines. Since power is supplied direct at primary voltage, usually 2300 or 4160 volts, voltage drop is no problem even when large motors are used in the portable equipment. This arrangement for portable equipment is especially attractive when well spacings are small since one outlet can serve several wells.

Table 3 lists the standard ratings of single and three-phase distribution-type transformers and also the preferred industry ratings of single-phase units.

Type of Line Conductor

In "sour" gas areas aluminum ACSR conductors generally are used instead of copper because of its non-corroding qualities.

The spans between poles for 440-volt line construction can be from 300 to 500 feet with aluminum, compared with 150 to 350 feet with copper. Thus, the pole costs for aluminum lines are roughly half that of copper lines, and since pole costs are an appreciable part of the total cost this represents a large saving.

Whenever possible, advantage should be taken of the natural spacing of wells to obtain the minimum number of poles. For example, with ten-acre well spacing (660 feet), pole spacings of 330 feet would be desirable. Similarly, with 40-acre well spacing (1320 feet), pole spacings of 330 or 440 feet would be desirable.

For equivalent conductor size, the voltage drop and wire costs are about equal.

Aluminum has the disadvantage that under fault conditions a longer length of line may be destroyed, since it melts more easily than copper. In addition, greater care is required to make satisfactory splices and terminations with aluminum.

[*To be continued*]

TABLE 3

Standard Distribution-Transformer Ratings

KVA Rating Single-phase Units	Bank KVA 3 Single-phase Units	Bank KVA 1 Three-phase Unit
1.2	4.5	
*3		10
*5	15	15
7.5	22.5	
		25
*10	30	
		37.5
*15	45	
		50
*25	75	
		100
37.5	112.5	
*50	150	
		200
75	225	
*100	300	
*150	450	
		500
200	600	
*250	750	
*333	1000	
*500	1500	

* These are industry preferred ratings.

NEW EQUIPMENT LITERATURE

For additional information, use mailing card inserted opposite this page

1—Concrete House

A portable, prefabricated, self-shaded concrete house finds particular application to oil field camps for both domestic and foreign operations. Basically, this construction system involves the production and erection of portable, precast, reinforced, lightweight concrete slabs or panels which comprise walls, roof and floor. These panels are poured at a central location in special sheet-metal concrete forms, are removed from the forms 18 to 22 hours after pouring, and are placed in vertical curing racks for a five to seven-day period.

The foundation is prepared beforehand and consists of a series of concrete piers spaced equally around the outside wall. Floor slab support is provided by means of pre-cast concrete beams extending across the inside house space, resting at either side on the wall-support piers. After curing, the panels are set in place, beginning at a corner on the foundation piers.

With wall and floor panels in place, a structural steel roof support is bolted in position on top of the side walls. Roof panels are fitted into place to complete the basic structure. Inside finish and partition arrangement are flexible. The outer surface ribs or fins cast into the panels form the self-shaded feature.

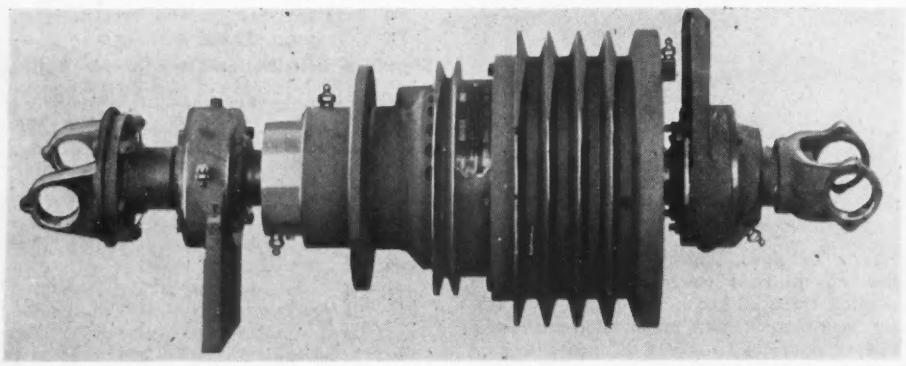
National Self Shaded House Corporation, P. O. Box 966, Ingleside, Texas.

(Check item 1 on postcard for more information.)

2—Power Takeoffs

Production of eight standard models of heavy duty power take-offs is scheduled to begin in 1947.

The new power takeoff units use as their basic principle an internal and external gear drive, operating as a strong and durable spline. Installation is made to the rear of the truck transmission case. The power takeoff then becomes an integral part of the drive shaft assembly for transmitting power direct from the truck engine, either through V-belts or chain drives.



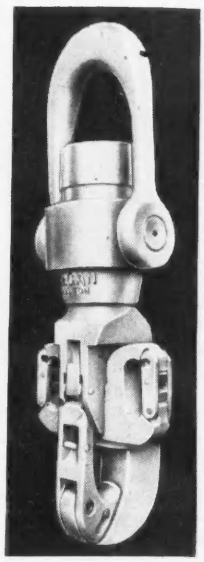
The eight power takeoffs will be manufactured in 50, 75, and 100 horsepower capacities, so designed because of the power they transmit. The model 50 is designed for both single and simultaneous drive. The latter permits operation of truck, or individual operation of driven equipment, or both simultaneously. Models 75 and 100 are designed for single drive, simultaneous drive and also for double drive. With double drive takeoffs, the truck may be operated alone; either of two pieces of driven equipment may be operated individually, or both pieces of driven equipment may be operated simultaneously.

Davey Compressor, Company, Kent, Ohio.

(Check item 2 on postcard for more information.)

3—Casing Hook

An all-forged alloy steel combination casing hook has been perfected after more than a year of experimenting and testing in the oil fields. All of the load-carrying parts of the hook are constructed of forged, heat-treated alloy steel, with more than a 4 to 1 factor of safety. The overall length of the hook has been shortened by the unique patented design of the yoke sliding down and riding on the hook bight. The type of bail attached to the swivel allows the hook to swing easily because of flexibility possible with this type construction.



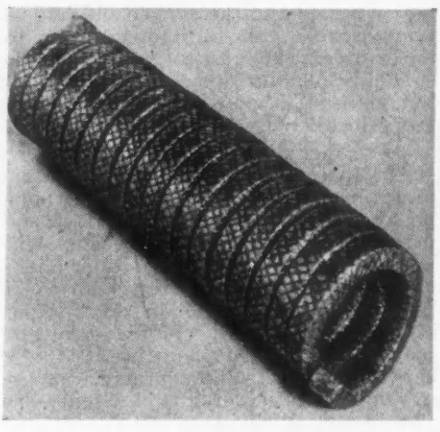
The new anti-swiveling mechanism permits approximately 60 degrees reverse rotation when in a locked position, and four locking positions are incorporated. In the compound spring design there is a heavy spring for lifting the swivel and kelly and a combination of a heavy and light spring for running drill pipe. All heavy drilling loads are transferred directly to the swivel block so that excessive shock-loads cannot damage the bearing. Latches are equipped with automatic locking devices and the main hook latch closes and locks automatically whether the load is picked up on the main hook or the elevator yoke.

Regan Forge & Engineering Company, Box 150, San Pedro, Calif.

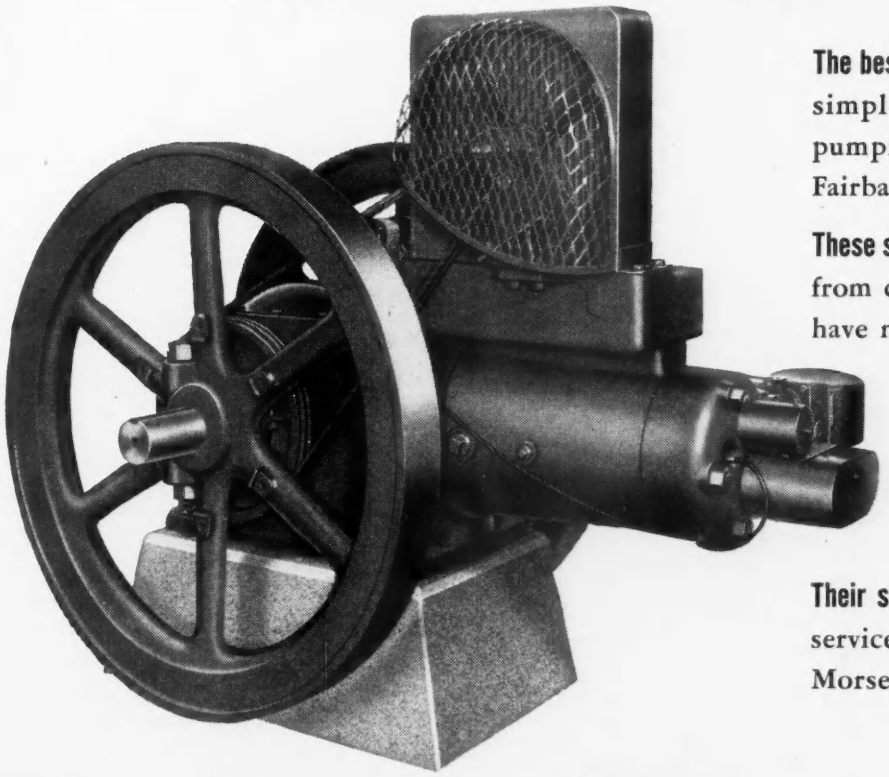
(Check item 3 on postcard for more information.)

4—Metallic Packing

The new flexible metallic packing illustrated here was developed for steam and air rods, centrifugal pump shafts, valve stems, and expansion joints where the temperatures do not exceed 450° F.



SIMPLICITY DOES IT!



The best results often reward the users of the simplest equipment...and for oil well pumping there is nothing simpler than Fairbanks-Morse ZC Engines.

These single-cylinder engines are amazingly free from complicated parts. For instance, they have no water-circulating pumps, no thermostats, no oil pumps. Users will tell you that they're lastingly dependable in round-the-clock service, and that they require a minimum of attention.

Their simplicity also means that fieldmen can service them right on the spot. Fairbanks, Morse & Co., Chicago 5, Illinois.

Fairbanks-Morse

A name worth remembering

Oil Field Equipment • Diesel Locomotives • Diesel Engines • Generators • Motors • Pumps Scales • Magnetos • Stokers • Railroad Motor Cars and Standpipes • Farm Equipment

Fairbanks-Morse Super-Spark MAGNETOS make engines start easily, improve performance, save fuel. Models for all engines. See the nearby Fairbanks-Morse Magneto Service Station.

or surface speed is not greater than 600 feet per minute. It is a resilient packing incorporating a cross-sectional composition of non-frictional metallic foil combined with asbestos yarns, high temperature resistant lubricants and flake graphite for effectively sealing and reducing frictional wear. Such construction is said to produce a compressible metallic packing that is sensitive to gland adjustment.

Manufactured by the Asbestos Textile and Packing Division of Raybestos-Manhattan, Inc., Manheim, Penn.

(Check item 4 on postcard for more information.)

5—Electronic Analyzer

The Hydrauliscope is a high-speed electronic analyzer designed to study pressure phenomena in hydraulic systems. Compact and portable, it is claimed to give consistent results when

used by operators unfamilar with electronic equipment. Controls and adjustment facilities are simple but sufficient to accomplish indication and record of high speed pressure phenomena incident to the operation of hydraulic systems. The pressure pick-up element used in connection with the Hydrauliscope is the resistance type and is responsive to high-frequency changes.

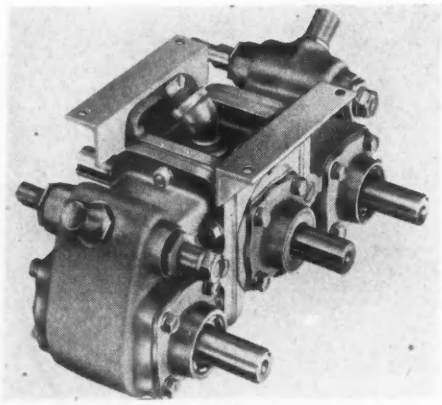
The unit includes a direct-coupled amplifier which is susceptible to low transient frequencies down to zero to permit the indication and record the absolute values of any transient. The limitations of low frequency response present in most commercial oscilloscopes have been eliminated. On occasion when the Hydrauliscope is used to investigate pressure phenomena resulting from the actuation of certain components or valves, it is desirable to have the horizontal sweep start with the mechanical actuation of the particular piece of equipment. With the aid of a simple contact switch, the starting of the horizontal sweep can be initiated. It can be furnished with attachments to permit photographic record of the curves traced on the screen of the cathode-ray tube.

Aeroquip Corporation, Jackson, Mich.

(Check item 5 on postcard for more information.)

6—Power Divider

A power-divider has been developed to simplify driving of two independent pumps on tank trucks distributing fuel oil or other petroleum products. The pumps can be operated simultaneously



or independently as required. It is also available with a third shaft extension for driving the hose reel or other equipment.

The new power-divider is available in various speed combinations to drive practically any pump at its correct speed without racing or lugging the truck's engine. The power-divider is direct-driven by a needle-bearing shaft from a power takeoff mounted on the truck's transmission.

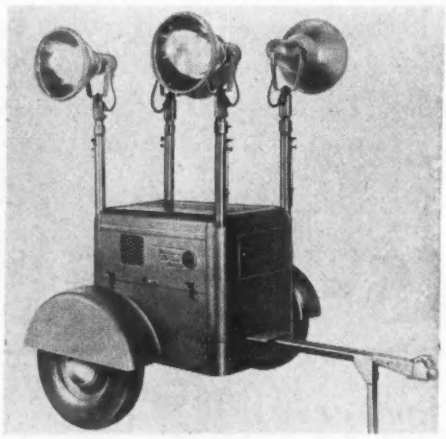
H. S. Watson Company, San Francisco.

(Check item 6 on postcard for more information.)

7—Floodlighter

A portable, commercial floodlighter has been designed to provide ample light for jobs at off-the-road locations where electric power is not available. Completely self-contained, the new floodlighter is housed in sturdy sheet metal. It is easily operated by one man and can be hitched to any vehicle and towed safely at high speed.

The assembly consists of a 3000-watt alternating-current electric plant, plus four 750-watt floodlights mounted on steel standards that may be raised to a height of seven feet. Each light is



pivoted so it will swing a full 360 degrees horizontally with a wide vertical arc. Each floodlight is operated by a separate toggle switch. A wide selection of floodlight combinations are available.

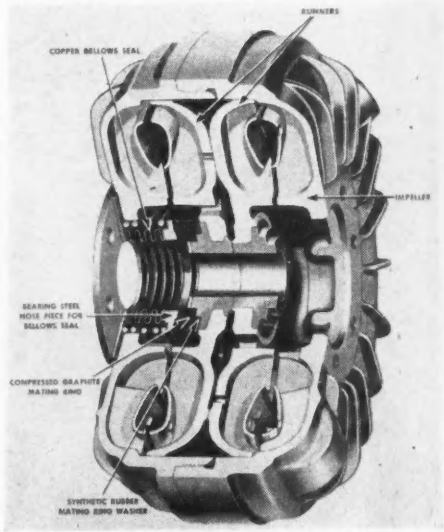
The prime mover for the electric generator is an air-cooled, four-cycle gasoline engine which requires minimum service. The floodlighter has electric push-button starting, and the generating unit provides a direct-current output for recharging the two heavy-duty starting batteries. Four convenient receptacles are available.

D. W. Onan & Sons, Inc., 43 Royalston Ave., Minneapolis, Minn.

(Check item 7 on postcard for more information.)

8—Hydraulic Coupling

Small hydraulic couplings have been introduced for use with induction motors and small internal combustion engines. The six couplings in the new series have various ratings, ranging from one to 25 horsepower at 1800 revolutions per minute. All but the smallest coupling consists of two sets of blades



on both the driving and driven members of the coupling. This is said to permit the greatest horsepower capacity per inch of coupling diameter and, at the same time produce a hydraulically balanced unit. Both the impeller, or driving member and the runner, or driven member, are lightweight aluminum castings. A cast iron insert forms the hub of the driven member, taking the drive to the output shaft. Stamped steel core rings in both the impeller and the runner form the hydraulic circuit. The unit is assembled by installing the runners and then merely screwing together the impellers with a rubber or coprene ring gasket to prevent leakage.

Advantages claimed for this coupling are: smooth acceleration, eliminates stalling, allows engine or motor to be fitted to actual running requirements, eliminates the need for shear pins and similar "break-and-replace" protection for driven parts, distributes the load on multiple engine or motor drives, permits the reversing of electric motors at full-load speed without high current surges, and, in case of a standard motor, permits the motor to start under no load and thus makes high torque available for starting.

Twin Disc Clutch Company, Rockford, Ill.

(Check item 8 on postcard for more information.)

9—Current Control

A new stray current control system designed to prevent the damaging effects caused by electrolytic action on underground pipe installations has been developed. It is a current and voltage sensitive device, operating jointly on a high current contactor. The contactor is activated by the current and voltage-sensitive device, the functioning of which depends on the amount of current or potential present in the pipe. This means that when stray current tends to leave the pipe, the contactor will close; thereby connecting the pipe and source of current with a solid metallic bond on which the current may travel harmlessly rather than by damaging electrolytic action through the soil. Conversely, the contactor will open instantly when the current tends to flow in the opposite will prevent the system from becoming a back-path for more stray current, which if permitted to flow uncontrolled would result in further electrolysis of the pipe.

The unit shown is 26 inches high, eight inches in diameter and may be mounted on a telephone-type pole. This does not include the contactor which is a separate unit, the size of which is not standard and will vary depending on the maximum amount of current to be allowed through the system. Weighing 40 pounds, the unit is built to withstand the most intense weather conditions and is easily accessible for maintenance. Cook Electric Company, Chicago.

(Check item 9 on postcard for more information.)

10—Heavy-Duty Trucks

Designed for severe oil field, logging and general extra-heavy duty hauling service where maximum traction and floatation is required is the new Model W-1602 series of six-wheel, six-wheel drive trucks for off-the-highway operation. Gross vehicle weight rating is 95,000 pounds with wheel base up to 330 inches. The wheel base and cab to end of frame dimensions are variable. The transmission consists of a four-speed gear train in combination with a fluid coupling and a three-speed transfer case. The axles are of the double reduction type employing spiral bevel and helical gears in the rear end.

The service brakes are actuated by compressed air, the rear brakes being 20¼ inches in diameter and seven inches wide, while the front brakes are 17¼ inches in diameter and four inches wide. A 16-inch diameter four-shoe disc-type brake is used for parking.

This series of trucks is available with several types and sizes of engines varying from 180 to 275 horsepower in diesel and 200 to 300 horsepower in gasoline-gas-butane engines.

The series requires 14:00 x 24 tires, 20 ply on front and on each of dual rear wheels. The frame channel is 12⅜ inch by 3⅞ inch by ⅜ inch steel with a 5/16-inch thick channel reinforcement and a ¼ x 16-inch fish plate reinforcement.

Manufactured by Oshkosh Motor Trucks, Inc., Oshkosh, Wis.

(Check item 10 on postcard for more information.)

Literature

11—Pipe, Tubing Fittings

A folder showing stainless steel pipe, tubing and fittings contains a table of the chemical composition of the most popular AISI type numbers of stainless steels. In addition, a unique cross sectional view of the new Ermeto fitting illustrates how a positive seal is formed without flaring, threading, welding or soldering of pipe or tubing.

John B. Astell & Company, 90 W. Broadway, New York 17.

(Check item 11 on postcard for more information.)

12—Forging

Of particular interest to designers of oil field equipment, manufacturers and users, is the new condensed handbook "Die-ology." It contains in simple language, well-illustrated descriptions of forging procedures and equipment, dies, tools, materials, design, heat-treating, methods of inspection and control. Included is a glossary of forging terminology. This booklet permits a better understanding of drop and upset forgings and what they can accomplish toward improvement of equipment and its performance in oil field service.

Interstate Drop Forge Company, 4021 N. 27th St., Milwaukee 9.

(Check item 12 on postcard for more information.)

13—Couplings

A new 46-page bulletin, No. 447, entitled "Farrel Gearflex Couplings," describes various types of couplings for use in industrial and marine service. Photographs, drawings, and installation illustrations, give a description of coupling functions, plus recommendations for the correct types for specific applications.

The types described have many years of engineering experience behind their development, and efficiency of design has been proven.

Buffalo Division, Farrel Birmingham Company, Inc., Ansonia, Conn.

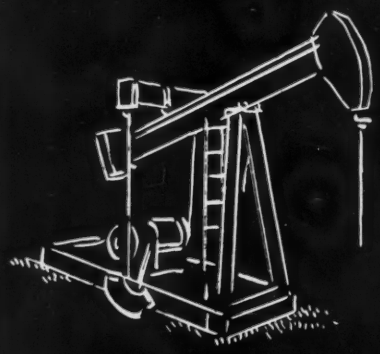
(Check item 13 on postcard for more information.)

14—Chains

The Union Chain and Manufacturing Company has just completed a 16-page two-color digest catalog which is profusely illustrated. It contains pertinent information on drive and conveying (or engineering class) chains and sprockets, finished steel roller chains and sprockets, silent chains and sprockets and flexible couplings. Also available are three full-size catalogs and a bulletin covering separately and in complete detail each of the products noted above.

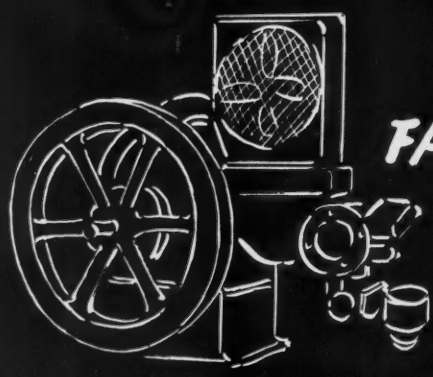
(Check item 14 on postcard for more information.)

AS SIMPLE



IDECO GEARED PUMPERS

+



FAIRBANKS-MORSE Z-C-ENGINES

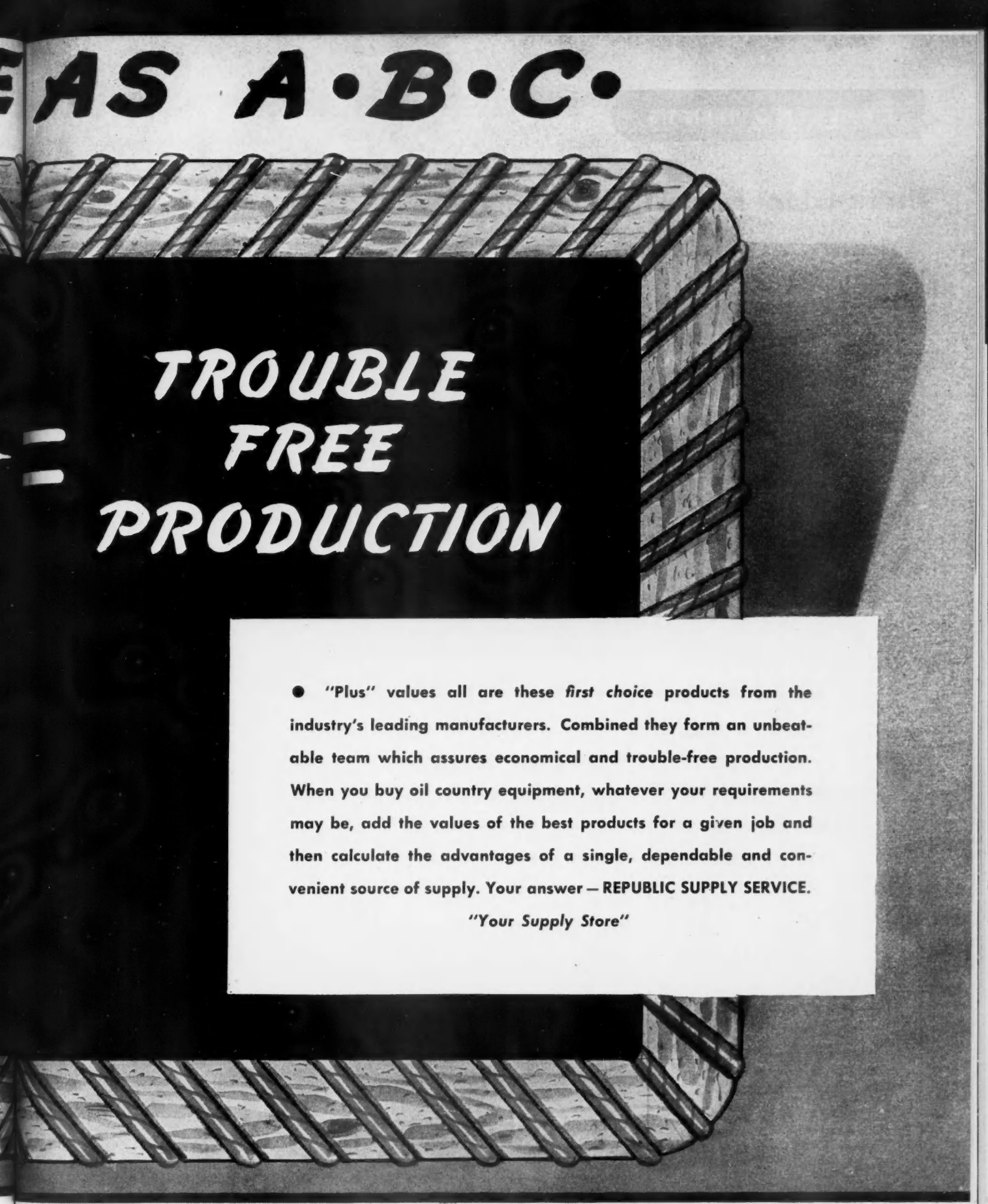
+

S.M. JONES SUCKER RODS

REPUBLIC SALES AND SERVICE POINTS

ARKANSAS — El Dorado, Patmos; ILLINOIS — Chicago†, McLeansboro, Salem; INDIANA — Griffin; KANSAS — Ellinwood, Russell, Wichita†; LOUISIANA — Haynesville, Lake Charles†, Mamou, New Iberia, Rodessa, Shreveport*; MISSISSIPPI — Jackson; NEW MEXICO — Artesia, Hobbs; OKLAHOMA — Cement, Oklahoma City, Seminole, Tulsa†; TEXAS — Abilene, Alice, Big Spring, Borger, Columbus, Corpus Christi, Dallas†, Electra, Falfurrias, Fort Worth†, Hebbronville, Houston*, K-M-A, Kenedy, Kermit, Kilgore, Nocona, McAllen, Monahans, Odessa*, Olney, Pampa, San Antonio†, Sundown, Talco, Victoria, Wichita Falls*

* District offices and stores. † Sales Office.



● "Plus" values all are these *first choice* products from the industry's leading manufacturers. Combined they form an unbeatable team which assures economical and trouble-free production. When you buy oil country equipment, whatever your requirements may be, add the values of the best products for a given job and then calculate the advantages of a single, dependable and convenient source of supply. Your answer — REPUBLIC SUPPLY SERVICE.

"Your Supply Store"

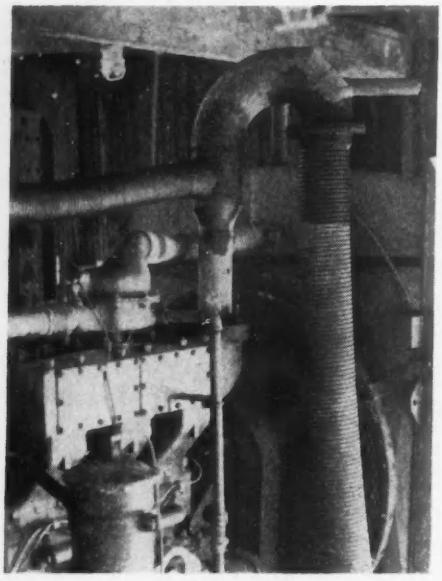
Republic Supply COMPANY

GENERAL OFFICES · · · HOUSTON 1, TEXAS

REPUBLIC STEEL

Reg. U. S. Pat Off.

Flexible Exhaust Hookup Yields Three-Way Savings



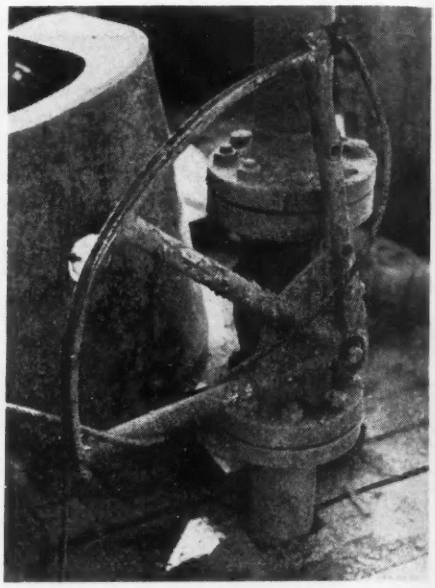
$5.00 is paid for each illustrated acceptable contribution. Mail to The Editor, THE OIL WEEKLY, P. O. Box 2608, Houston 1, Texas

EXHAUST LINES

Expansion cracks in exhaust lines, maladjustment of fittings, and kindred troubles are eliminated in the installation illustrated. Instead of making solid connections between the manifold and main exhaust line fitting, the latter permanently attached to the engine base, flexible hose was employed. Although this material is more expensive than regular piping, savings were realized in a threefold manner by: (1) elimination of necessity for making precise alignment and fabrication of special fittings during original installation; (2) avoiding the possibility of expansion and contraction cracks during the life of the system; and (3) greatly reducing fitting-up time whenever the engine is overhauled.

By dropping vertically the main flexible line as shown, mechanical strain on the system is eliminated, and the line can absorb the many minor vibrations and movements that occur during a normal running period. The installation has been found to be very satisfactory, being amply tight and as serviceable as rigidly connected hookups.

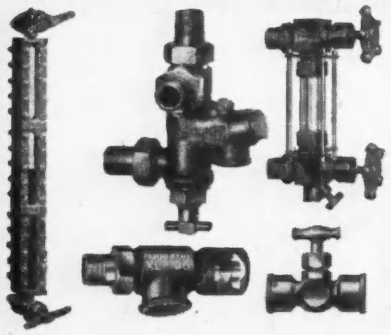
Exhaust Quadrant



MUD LINES

A time-saving device installed by a drilling superintendent consists of a quadrant paced on the mud standpipe valve with which the plug-type valve can be closed from either the driller's position or other desired point on the rig. As illustrated, the quadrant is made up of salvaged pipe materials, the rim of the device being a length of pipe split open and laid back around the three spokes and welded in place. A length of light sand line, attached to the upper end of the quadrant, passes over the open rim and down through a hole in the derrick floor, to be directed then toward the centralized control point. One of the spokes is the original valve handle and the other two are welded in place with the aid of two triangular web plates welded between them near the center point. The device takes up little space and is easily removed when the rig is being torn down.

PENBERTHY
QUALITY
PRODUCTS



Penberthy liquid level gages of various types—injectors—ejectors—all so widely used throughout the oil industry because they have always been dependable under the most severe service conditions.

All are of rugged construction and made by an organization with 57 years experience in the manufacture of quality products.

See Pages 2450 to 2455, Composite Catalog

PENBERTHY INJECTOR CO.
DETROIT, MICH. Canadian Plant WINDSOR, ONTARIO

Mud Gauge Mounted Near Driller

MUD GAUGES

If the mud gauge be mounted on the end of a long branch from the mud line there is always the possibility that the mud within the line will harden or bridge over, and thus affect the reading of the gauge. Mounting the gauge close to the standpipe eliminates much of this difficulty, but sometimes requires the location of the gauge where it is not easily visible by the driller.

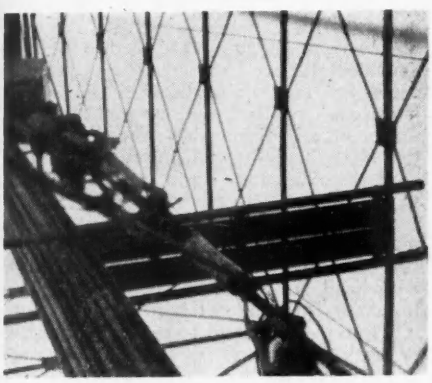
One contractor brings a 2-inch line up from the mud line to a point directly in front of the drum on the drawworks, and close enough to the driller's stand so that it is always visible. The pressure line is equipped with a valve just behind the gauge, a run-off line being piped down through the floor and into the annulus above the blow-out preventer. Simply by cracking open the block valve, flow is established through the gauge by-pass line, and any mud accretions are flushed out by the full standpipe pressure. The flushing out of the by-pass is easily accomplished during the lubricating time at the beginning of each tour, and the line usually remains clear throughout the 8-hour period. Use of the flushing line also insures mud, instead of air, in contact with the gauge element and prevents hammer.

DRILLING HINTS

Middle Board Permits Pulling Tubing In Thribbles

PIPE HANDLING

Racking a string of tubing pulled in thribbles from a deep well presents a difficult problem if provision is not made for supporting the tubing in the middle to prevent it from buckling or slumping in the derrick. A Texas drilling contractor contrived the device shown to give lateral support at the midpoint of a thribble of tubing.



This middle board consists of a joint of four-inch standard pipe which spans the derrick some distance off center of the well. It is anchored securely at both ends to prevent any movement. Inboard of this pipe or toward the center line of the well, another section of pipe is braced in such a manner that it extends only half way across the derrick as shown. The width of this middle board is such that it will accommodate ten rows of thribbles of two-inch upset tubing, each row comprised of 16 thribbles.

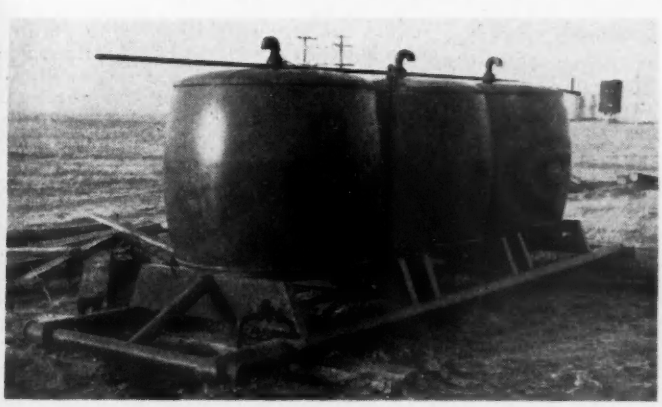
The board is also equipped with a platform on which a man may stand in case it is necessary that someone guide and support the tubing while it is being run in the hole. After a tubing job has been completed, the middle board may be swung from its horizontal position into a nearly-vertical position and secured to the derrick until it is needed on the next tubing job.

When coming out of the hole with a deep string of tubing, it is no unusual job to rack the tubing with the aid of the middle board. The racker on the derrick floor places the tubing in the tubing rack while the derrickman swings the thribble in its proper place in the middle board and in the thribble board.

War Surplus Anti-Submarine Net Buoys Fabricated Into Safe and Efficient Fuel Storage Tanks

FUEL STORAGE

Surplus net buoys, cylindrical tanks which were used as anti-submarine harbor nets during the war, and which are available as surplus war goods are used to excellent advantage by one drilling contractor as diesel fuel storage tanks. Three such tanks are equipped with necessary pipe outlets, vents and filler fittings and mounted on a skid base which is easily hauled about from well to well. As shown, the assembled unit is simple in make-up, sturdy, and comparatively light, and has a relatively low center of gravity. A practice followed by this contractor consists of keeping all three tanks filled with fuel, but not taking fuel from the third unless and until it is required during an emergency; typical cases in point being at such times when an error is made in estimating remaining fuel on hand, or when fueling trucks cannot make it to the rig at the desired time.



As manufactured, these buoys are of heavy rolled steel plate which is well suited for this purpose. With proper bracing as illustrated, this unit can be made into an attractive and serviceable piece of equipment at a cost far below that of regular fuel tanks designed for this purpose.

FACTS
ABOUT COMPLETING ANY WELL, IF YOU ARE INTERESTED IN ITS FUTURE

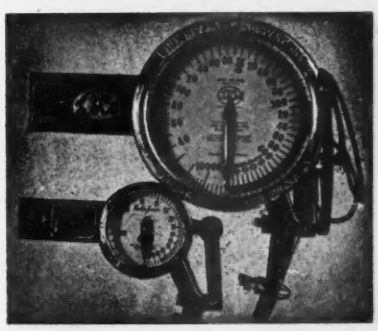
The inside of the casing should be scraped!

Burrs from gun-shot holes, hardened cement and mud, paraffine and mill or rust scale, all can be removed from the inside of your casing. Think of the saving of time and money when you can run swabs and packers at any future time without tearing up rubbers; think how you can run tools in and out of the hole without hanging up on any obstructions; think how securely you can pack off against clean, smooth casing. Plan ahead to scrape your casing while the rig is up, and

Phone the Baker man in your territory . . .

BAKER
ROTARY
CASING SCRAPER

LINE SCALES



20 MODELS to choose from

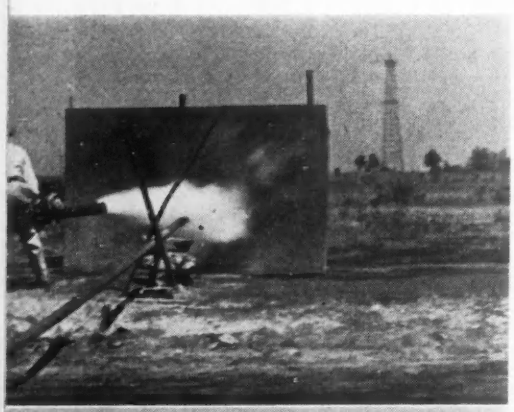
(Above) Super 500,000# capacity, 14" dial. (Below) Packer Special, Capacity 40,000#, 6" dial. 18 other models for every drilling, well servicing, or work-over need.

With a Line Scale you know the pull on the line, and the weight on the bit in pounds. Accurate, sensitive, rugged and economical.

Line Scales are dependable, even in areas of rapid temperature changes. Repeated tests prove the accuracy of Line Scale readings under all working conditions.

LINE SCALE CO., Inc.
Phone 2-1765, 907-11 SE 29th St., Box 4245
Oklahoma City, Oklahoma

Carter Stresses Fire Prevention



Top: Simulated break in high-pressure line causes flames to spread over wide area.

Middle: Carter firemen extinguish flames from burning oil.

Below: Carter personnel gets pointers on latest fire-fighting methods.

THE most extensive program of demonstrated fire prevention and fire protection procedures ever undertaken in The Carter Oil Company has been inaugurated and is continuing in all divisions and in all districts, according to J. M. Ivy, safety director.

Actual demonstrations of causes of fires—with staged conflagrations being set off and then conquered by modern means of fire protection—have been held. Several hundred employes of Carter have participated, either as "bit players" in the fiery dramas or as spectators in the demonstrations.

One of the experiments, graphically reenacted before the workers, duplicates a condition that might occur if a high pressure line should break and the gas catch fire, flaring against a wall, a tank or other piece of equipment.

In the experiment, a one-inch line, 60 feet long, is connected to gas pressure which throws its flame about 30 inches into the center of a four by five-foot steel target. The spreading action of the flame shows clearly how such fires spread with tremendous rapidity.

Another of the spectacular experiments calls for igniting of gasoline or oil in a ground pit. The company's fire-fighting equipment then is used to show best methods of extinguishing blazes.

While the demonstrations stressed best methods of protecting against fire loss, much emphasis was placed on fire prevention. At every demonstration, representatives of fire departments from near-by cities were in attendance and participated in the meetings and the discussions.

Regulations for working in enclosed locations where the atmosphere might be gaseous, such as under receiving houses, under drums or towers or in closed vessels, were discussed with emphasis on necessity of gas tests before such operations begin.

Best operational methods during electrical storms and in other conditions which might create fire hazards were outlined by Ivy, by safety experts with fire departments, and by gasoline plant supervisors.

Color photographs of the demonstrations were made, and during October and November these were shown at safety meetings and at foremen's gatherings. The slides include more than 100 graphic pictures of the fire prevention and fire protection demonstrations.

Products Prices Unchanged; Demand Continues Brisk

Prices of the industry's refined products remain generally unchanged, and demand continues good in most areas.

Demand for gasoline is still unusually high for this time of the year and very little material can be added to stocks. Along with this out-of-season demand for gasoline is the lack of adequate tank car transportation, which is making it extremely difficult to maintain inventory balance. Mid-Continent and Mid Western refiners report they are from one to two weeks behind in shipments. Some refiners have indicated concern over the slow stock buildup and believe heavier accumulations must start within a few weeks or the heavier demands of spring will find them without adequate supplies.

The only gasoline price changes reported during the week occurred in Des Moins, Iowa, where a gasoline price war got under way as an independent service station operator dropped his rates 3.5 cents a gallon. Standard Oil Company of Indiana immediately announced a comparable decrease in its prices to dealers, making them 8.1 cents for regular-grade and 9.6 cents for premium, exclusive of taxes.

Fuel oil demand at New York harbor was reported light as mild weather continued. One harbor supplier announced a drop in No. 2 fuel oil prices to 6 cents in barge lots and 6.1 cents in tank cars. This step was taken to meet competition of barge lot sales that were being made at .15 cents and more under posted prices. Other suppliers are holding to the 6.3 and 6.5 cent prices, but report few sales are being made. Some material is moving to jobbers, who are interested in filling their tanks as a hedge against the talked-of tug boat strike, but the volume of sales is much lower than average for December.

Demand for heating oils was reported heavy in the Mid Western and Central Michigan areas, and some are afraid their dwindling supplies will not be sufficient for the winter, even with marketers rationing supplies to their customers. On the Texas Gulf Coast some refiners are cutting runs to stills to avoid excess No. 2 fuel, which is piling up as a result of the continued mild weather on the Atlantic seaboard.

Texas Requires New Form From Carbon Black Plants

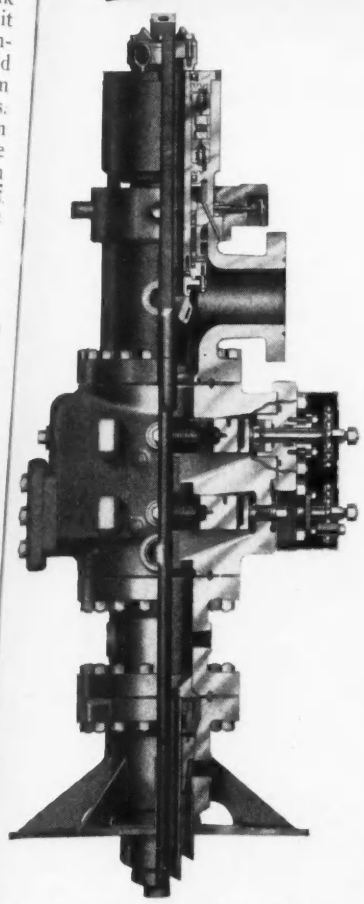
Information concerning carbon black operations in Texas was submitted to the Texas Railroad Commission at a hearing last week. In addition to requests for renewal of operating permits which expire January 1, operators filed data on the throughput capacity of plants, type of plant, daily average gas consumed, recovery of black and Btu content of gas utilized. Evidence indicates that some of the plants are recovering less than the statutory limit of one pound of black per Mcf.

The commission submitted, for the operators' consideration, a new carbon black report form, which requires a report of the Btu content and a breakdown of types and grades of plant yield.

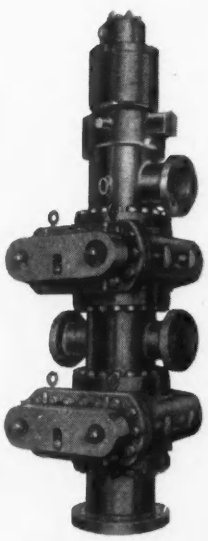
A spokesman for several plants asked that a report of sulphur content also be required on the new form.

Another SHAFFER CONTROL GATE ADVANTAGE...

JUST ONE OPERATION BOTH CLOSES THE GATE AND KEEPS IT CLOSED!



The Shaffer Double Cellar Control Gate *(above)* and two Shaffer Type 46 Cellar Control Gates *(below)*—both hook-ups with Shaffer Combination Rotating Blow-out Preventer and Stripper on top



Shaffer Rams stay where set— no secondary safeguards required!

WHEN emergencies threaten, you want a control gate in your cellar that closes—and *stays* closed—without any auxiliary locking devices or extra operations to worry about. And you *get* this positive, fool-proof operation in Shaffer Control Gates because Shaffer rams operate by *positive* mechanical screw feed. They automatically stay in the position they are set *without any further safeguards on the part of the operator*. Therefore, only ONE quick operation is required to both close the Shaffer gate . . . and *keep* it closed!

Think what this fool-proof feature means in protecting the safety of your well during the excitement and rush that accompany a threatening blowout. No auxiliary closing devices to operate —no risk of the gates opening under severest pressure conditions!

Yet, when it is desired to open Shaffer Gates, they open quickly and easily!

Six Other Shaffer Advantages

Rams that *automatically* stay in the position they are set without auxiliary devices are just one of the unique Shaffer advantages that have made these gates the outstanding choice for modern pressure control protection. Check these additional Shaffer features . . .

1. CELLAR-SAVING COMPACTNESS—Minimum height reduces cellar requirements, saves rig-up time, cuts installation costs!

2. EASY RAM CHANGES—Rams can be completely changed in the Shaffer Gate by removing just ONE end cover!

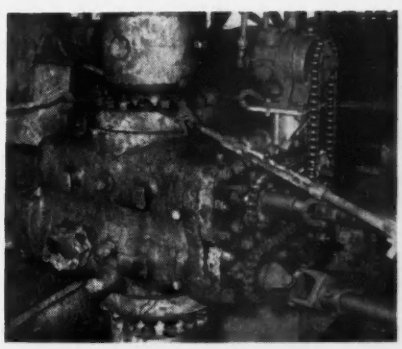
3. SIMPLE INSTALLATION—No complicated piping or space-wasting pressure manifolding is required for Shaffer Gates!

4. POSITIVE MECHANICAL DRIVE—Ram operation is quick, simple, direct and fool-proof.

5. EQUALIZED RAM PRESSURES—The higher the well pressure, the tighter Shaffer Rams seal off!

6. POWER OPERATION—Choice of air, hydraulic, electric and steam power drives—in addition to manual operation—are available for closing and opening Shaffer Gates, assuring maximum adaptability to *any* operating condition.

Shaffer Cellar Control Gates are available in a complete range of sizes from 6⅜" to 21½". There is a size to meet *your* requirements.



MAXIMUM COMPACTNESS— MINIMUM "CELLAR CLUTTER"!

Here's a typical Shaffer installation on a well in Texas. Hook-up includes a Shaffer Combination Rotating Blow-Out Preventer and Stripper (top) . . . a Shaffer Double Cellar Control Gate for closing off *both* open hole and around drill pipe . . . a Shaffer Air Motor Drive for quickly opening and closing the Gate—*plus the added protection of manual standby*.

Note unusual compactness of hook-up and complete absence of complicated piping. There's no cluttered cellar to increase labor and rig-up costs . . . nothing to complicate installation, maintenance or operation!

Get all the facts on Shaffer-engineered Control Gates by sending for your copy of the complete Shaffer catalog. Write today—or call at your nearest Shaffer representative.

See pages 2687 to 2730 of your Composite Catalog.

SHAFFER

HIGH PRESSURE DRILLING AND CONTROL EQUIPMENT • FISHING TOOLS THAT EXCEL

SHAFFER TOOL WORKS, Brea, California • California Service Shops: Santa Fe Springs and Taft
HOUSTON, TEXAS, 6006 Navigation Blvd. • ODESSA, TEXAS, 1925 West Second Street
OKLAHOMA CITY, OKLAHOMA, Acme Oil Tool Company, 1001 S. E. 29th Street
CASPER, WYOMING, Mountain Sales and Service, 133 North Walcott Street
EXPORT SALES OFFICE: Shaffer Tool Works, 30 Rockefeller Plaza, New York, N. Y., U. S. A.

☆ Oklahoma

Major County Wildcat Tests 15 Million Cubic Feet of Gas

Major County wildcat makes 15 million cubic feet of gas on test; test may open new pool in McClain County or extend Southwest Wayne field; gas field opened in Oklahoma County; Cotton County outpost put on pump; gas area opened in Hughes County.

Major County: R. Olsen Oil Company has opened a gas area with Ott 1, CSW SE 4-21n-9w, southeast of the Ringwood area. On a drill-stem test the well made 15 million cubic feet of gas through ½-inch choke in 20 minutes, with pay coming from the Second Wilcox sand at 7992-8124 feet.

McClain County: Wood Oil Company and associates have opened an oil pool or extended the Southwest Wayne field northwest with Henderson 1, SE NE NW 14-5n-2w. After casing was perforated with 25 shots in the Hunton lime from 7098-7125 feet, the well blew an estimated 5 million cubic feet of gas and a spray of distillate. It is now shut in for further testing. Originally drilled by the Mid-Continent Petroleum Corporation to 7210 feet, it was temporarily abandoned in October at that depth. Wood Oil and associates took over early this month. If further tests from the Hunton are not conclusive, operators will deepen to the Bromide.

Oklahoma County: Another gas pool apparently is being opened in northern Oklahoma County. Ace Gutowsky et al's Martin 1, CSW NE 20-13n-2w, near Witcher townsite, tested 5 million cubic feet of gas a day from the Bartlesville sand at 6064-84 feet. Crew is drilling below 6110 feet and will test the show later. Bartlesville was topped at 6064 feet. The wildcat is 2 miles east of Gutowsky et al's Crum 1, which made a small producer in the Bartlesville sand a year ago.

Cotton County: Roy L. Fisher et al are installing pump at Bates 1, NW SE 17-3s-11w, outpost a mile southwest of the Soldier Creek field. The well is swabbing 50 barrels of clean oil a day. Drilling to 1587 feet, the test plugged back to 1582 feet and set casing at 1563. It is near the center of a block held by Cities Service Oil Company.

Hughes County: A gas area has been opened in the Wetumka area by Leach & Warren's Meadors 1, NE NW SE 8-9n-10e. The well is making 8,270,000 cubic feet of gas per day from the Calvin sand, topped at 922 feet. Production is from 922-60 and 990-95 feet, with 10-inch casing set on bottom at 995 feet. The well originally was to have gone to the Booch sand zone, but with the prolific showing at this shallow depth, operators decided to complete it as a gas producer.

☆ Kansas

Kingman County Given One of State's Best Strikes of Year

Kingman County has new oil pool; pool opener in Butler County completed; Cowley County wildcat opens small-producing oil pool; oil pool opened 3 miles west of Guilford pool; Pratt County wildcat abandoned after testing.

Kingman County: Plaines Exploration Company of Denver's Swander 1, wildcat 9 miles southeast of the Cunningham oil and gas field, has been estimated good for 1000 barrels of oil per day from the Viola lime for one of the state's major strikes of the year. Unofficial estimates of the new discovery's productivity came following field reports that oil of high gravity (39.6 corrected) was flowing into the pits at the end of a 28-minute drill-stem test. The test was made between 4407-12 feet in the Viola, topped at 4406 feet. The wildcat, in SW SE SW 20-28s-9w, on acreage farmed out by Phillips Petroleum Company, will be deepened to test the Simpson sand and the Arbuckle lime formations, both of which yield oil in the Chitwood pool of Pratt County, 15 miles west.

Butler County: A small-producing oil pool has been opened in Butler County by K. T. Weidemann. Shinn 1, SW SW NE 19-29s-8e, was completed on pump for 30 barrels of oil per day, with pay from the Mississippi chat, 2730-73 feet, total depth. The wildcat is 4 miles east of the Brandt-Sensenbaugh pool.

Cowley County: B. B. Blair's Miller 1, NW NW SE 15-32s-5e, a mile west of the Frog-Hollow pool, has opened an oil pool, although its production is extremely low. Miller 1 was completed for 6 barrels of oil per day from the Bartlesville sand from 3040-96 feet, total depth. Its discovery is of little significance due to low recovery.

Wilson County: Ruth Lane, Kansas City operator, and associates, have opened an oil pool with Campbell 1, SE SE SE 19-28s-15e. It was completed for 30 barrels of oil per day, with pay from the Bartlesville sand, 1423-53 feet. Total depth is 1529 feet. The pool opener is 3 miles west of the Guilford pool.

Pratt County: Cities Service Oil Company has abandoned Long 1, CNE NE SW 2-26s-13w, wildcat, as a dry hole. Located 3 miles east of the Frisbie pool, the test was taken to 4410 feet in the Arbuckle lime without encountering commercial shows. Arbuckle was topped at 4360 feet.

Indian Leases Offered

Sealed bids for oil and gas leases on rsstricted allotted Indian lands will be opened at the Kiowa Indian Agency, Anadarko, Okla., January 15. A total of 10,041.75 acres is being offered in Jefferson, Kiowa, Caddo, Cotton and Tillman counties, Oklahoma. Sealed bids will be received until January 22 at the Osage Auditorium, Pawhuska, Okla., on oil and gas leases of restricted Indian lands, by the Osage Indian Agency. A total of 16,218 acres is being offered at the sale.

Wells Completed in United States in Week Ended December 21, 1946

Data preliminary and subject to revision. Revised and more complete data on all completions and exploration shown in monthly summaries published in last issue of each month.

State or District	FIELD COMPLETIONS: New Wells Oil	Dist.	Gas	*Input	Dry	Total	Old Wells Deepened	EXPLORATORY COMPLETIONS Oil	Dist.	Gas	Dry	Total	ALL COMPLETIONS This Week	Last Week	This Week 1945
Alabama															2
Arkansas	2		1			3					2	2	5	6	5
California	24		1		2	27					3	3	30	36	34
Colorado	5					5					1	1	6	3	2
Florida											1	1	1		
Illinois	18				16	34		1			11	12	46	45	52
Indiana	5				3	8					1	1	9	14	20
Kansas	27		13		8	48	2				6	6	56	43	40
Kentucky	1				4	5					1	1	6	11	18
Louisiana	17	2	2		3	24		1			5	6	30	34	26
N. Louisiana	12	1	2		2	17					4	4	21	20	13
S. Louisiana	5	1			1	7		1			1	2	9	14	13
Maryland											1	1	1		
Michigan	2				4	6					4	4	10	19	17
Mississippi	6		1			7		1			4	5	12	6	5
Montana	5		1			6							6	3	4
New Mexico	10		1			11	1						12	7	5
New York	15			10	1	26		1				1	27	25	25
Ohio	9		13		5	27					1	1	28	28	16
Oklahoma	42		2	2	21	67	2				15	15	84	62	56
Pennsylvania	28		7	15	1	51	1						52	50	45
Texas	98	1	8	2	26	135	3	5	1	1	30	37	175	164	231
E. Tex. Bor. Co.'s	1		3		1	5							5	1	7
Rest of E. Tex.	7		1		1	9	1	1			3	4	14	8	18
North Texas	18		1	2	10	31		1			4	5	36	52	77
W. Central Tex.	7				4	11	1				5	5	17	10	11
West Texas	35				4	39		1			1	2	41	33	67
Texas Panhandle	2		1			3							3	11	7
G. Coast, Upper.	10				3	13			1	1	3	5	18	13	12
G. Coast, Lower.	14	1	1		1	17	1	1			4	5	23	25	25
Southwest Texas	2		1		1	4		1			6	7	11	10	5
S. Central Tex.	2				1	3					4	4	7	1	2
West Virginia	3		13			16							16	17	11
Wyoming	3					3		1				1	4	2	5
Total U. S.	320	3	63	29	94	509	9	10	1	1	86	98	616	575	619

* Includes salt water disposal wells.

Never give corrosion an even break

...use SUCKER RODS of "K" Monel

When a sucker rod broke every 50 days . . .

. . . and the entire string had to be replaced every 5 months . . .

. . . operators of Arrington No. 2 well in the Howard Glasscock Field at Big Spring, Texas, made a wise move.

OUT went the rods which had given so much trouble. Into Arrington No. 2, on November 26, 1941, went a string of ¾-inch "K" Monel* sucker rods manufactured by W. C. Norris Manufacturer, Inc., Tulsa, Oklahoma.

On December 7, 1945—after 1471 days of continuous service in this corrosive well—E. G. Rodman of The Rodman Supply Company, Odessa, Texas, owner of the lease, reported:

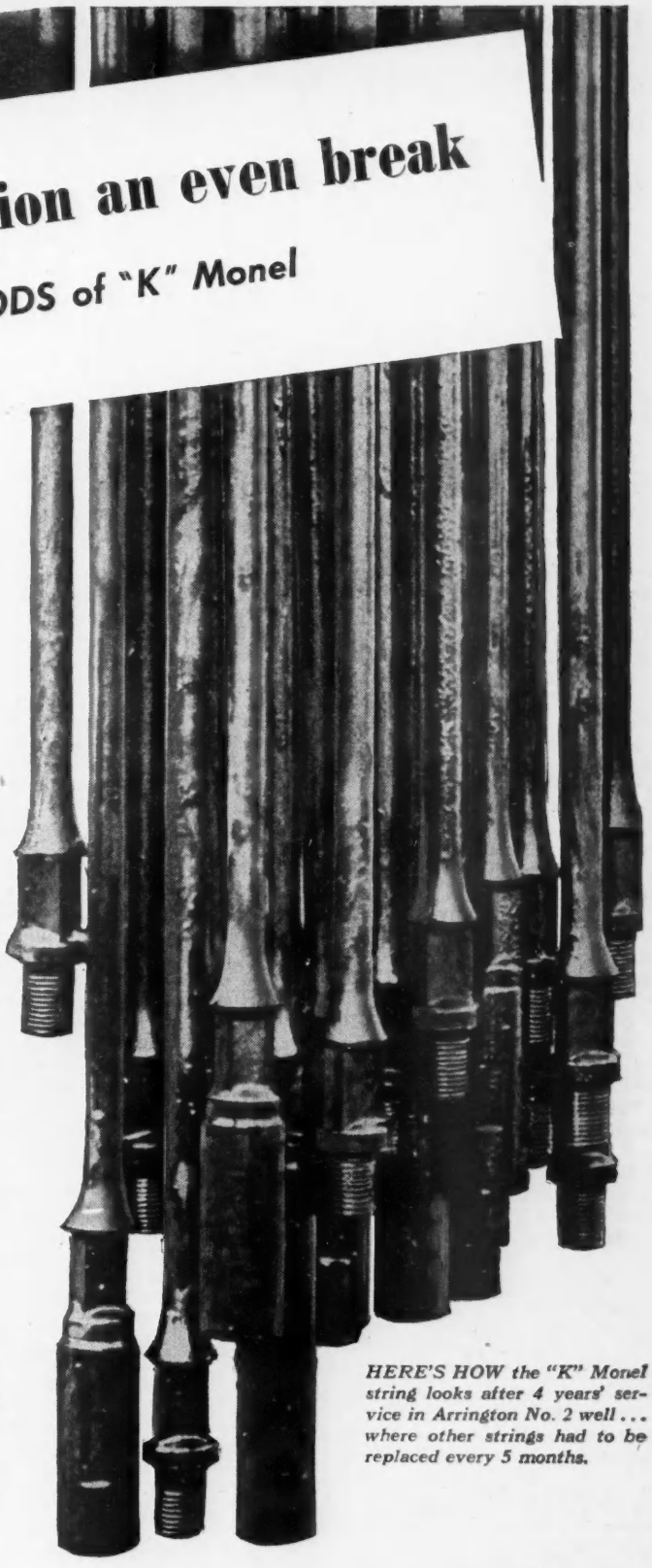
"The string of 'K' Monel rods installed in 1941 was used every day—24 hours a day—in 2½" tubing with a 2¼" barrel until July 1944, when the 2½" tubing was replaced with 3" tubing and a 2¾" barrel (42" stroke—20 strokes per minute). Despite the considerable load increase as a result of installing the larger tubing, we have continued to use the same rods without a single break or shut-down due to rod failure. In addition, the rods appear to be as good as new."

Compare this with the normal expectancy of 29 breaks which would have occurred in the previously used string during a 4-year period. Consider the savings in not having to pull the string and fish for broken rods. Figure the savings in manhours...and the value of increased production. And, don't forget the *additional* savings in sucker rod costs.

* * *

"K" Monel is proving its superiority for use under conditions that rapidly weaken and destroy many metals. Exceptionally high physical properties (which are maintained under corrosive conditions) can be developed by heat treatment of this age hardenable alloy.

For dependable operation throughout a long, trouble-free life, equip your wells with "K" Monel rods.



HERE'S HOW the "K" Monel string looks after 4 years' service in Arrington No. 2 well... where other strings had to be replaced every 5 months.

"K" MONEL

NICKEL INCO TRADE MARK **ALLOYS**

MONEL* • "K" MONEL* • "KR" MONEL* • "R" MONEL* • "S" MONEL* • INCONEL*
NICKEL • "L" NICKEL* • "Z" NICKEL

*Reg. U. S. Pat. Off.

THE INTERNATIONAL NICKEL COMPANY, INC.
67 Wall Street, New York 5, N. Y.

☆ New Mexico

San Juan County Dakota Test Logs Additional Oil Show

San Juan County wildcat logs additional oil show, and Dakota is next objective; water eliminates high Devonian test in the Cass-Weir multi-pay area, Lea County; Bowers sand producer in Hobbs field yields fourth produncer.

Byrd & Frost, Inc., and P. B. English's Hargrove-Federal 1, C NW NW 4-27n-10w, scheduled Dakota test for the Kutz Canyon area, logged an oil showing at 5740 feet, and was drilling shale at 5870 feet. Progress has been delayed due to loss of rotary returns at 4 levels between 5432-5710 feet.

Lea County: Continental Oil Company et al's Skaggs 5-B-23, SW NE 23-20s-37e, ½ mile east of the 7700-foot Pennsylvanian oil discovery for the Cass-Weir field, entered the Devonian at 8155 feet, or about 50 feet higher than the discovery, but tested water at 8417-54 feet. It will be deepened. The apex of the Devonian structure, potential source of production, is farther east.

Hobbs Field: Standard Oil Company of Texas' State 2-29, NE SW SE 29-18s-38e, west offset to the largest of 2 San Andres lime producers that were plugged back to the Bowers sand for recompletion, emphasized the ability of this upper zone to produce in flowing 193 barrels of oil in 5½ hours through casing after perforating at 3155-75 feet. The well later flowed 280 barrels initial through 12/64-inch.

Sun Oil Company's McKinley 1-B, which has been showing for a small pumper from deeper pay on the northeast edge of the structure, was cleaning out at 7514 feet after nitro shot at 7618-58 feet in Basal Permian, possibly Wolfcamp. Production test will not be undertaken until the hole is clean of shot cavings.

Roosevelt County: Continental and Cooperative Refinery Association's Alston Unit 1, C SE SE 20-7s-35e, was drilling dry lime at 4630 feet after establishing the water level in the San Andres at 4280 feet. This wildcat tested a small flow of gas at 4290 feet, thus giving encouragement for additional prospecting on the geophysical high.

Curry County: Homer W. Snowden Oil & Gas Company's Garrett 1-a, C NE NE 26-5n-34e, swabbed dry after acidizing perforations at 2850-60 feet and 2865-2900 feet in the San Andres. Perforations may be made opposite shallow oil showings.

☆ West Texas

Third Ellenburger Producing Sector Is Given TXL Field

Third Ellenburger producing sector given the TXL field paves the way for important southeast expansion; new shallow oil field in the making on the Reagan-Crockett County line; production in Scurry County extended; Winkler County wildcat has oil show in Clear Fork.

Ector County: Rowan Drilling Company's Parker 2, near C SE NW T&P Railway 40, Block 45, T-1-S, offsetting southerly Devonian production in the TXL field, established a new Ellenburger producing sector 2 miles south by east of nearest production from this zone. Pipe has been set for completion from 98 feet of pay drilled to 9723 feet. The Ellenburger was entered at 9625 feet with elevation 3260 feet, and a drill-stem test at 9673 feet yielded 124 barrels of oil in 1½ hours. A second drill-stem test at 9675-9723 feet resulted in rated flow of 82 barrels of oil hourly. This strike tested comparatively little oil with some salt water in the Devonian at 7703-7750 feet, although structurally high, and when deepened to the Silurian it flowed 243 barrels of oil through tester in 3 hours. The company has applied for commission hearing to dual complete from the Ellenburger and Silurian.

This new Ellenburger area is expected to be narrower than that in the main field as the structure dips sharply to the west, while a steep fault prevails to the east as evidenced by Phillips Petroleum Company's TXL 1-E-a, 1 mile east by north and on the downthrow side of the fault. The latter entered barren Ellenburger at 11,285 feet, or 1672 feet low to Parker 2. One Ellenburger producer has been completed on the west side of this fault, but north and northwest offsets were Ellenburger failures.

The Superior Oil Company's Parker 7, south offset to Rowan Drilling Company's Ellenburger strike, recorded the first Silurian completion for the field, although prolific Silurian flow has been passed up by numerous Ellenburger wells, in flowing 314 barrels of 39.4-gravity oil initial through 28/64-inch choke from open hole at 8470-8535 feet. The gas-oil ratio on this test was 860/1, while working pressure on tubing dropped to 25 pounds. This zone is expected to be a water-drive, with prospects of a better crude yield per acre than other Silurian producing areas, which have been disappointing in output.

Reagan County: Moore Exploration Company's Friend-Standard 1, SWc NW Sect. 1, Georgetown Railway Survey, headed oil after using 3000 gallons of acid in open hole at 2316-2538 feet, having plugged back from water at 2582 feet. Production is from several zones of porosity below 2390 feet. This prospective discovery is 1¾ miles north by east of the firm's Neal-Standard 1, Sect. 2, D. L. Carver Survey, Crockett County, which is idle after showing for a small pumper in drilling the same horizon to 2392 feet. Standard Oil Company of Texas farmed out shallow rights on both blocks.

Scurry County: D. & R. Oil Company, successors to E. L. Goos et al's Henderson 1, C NE SW H&TC Railway 148, Block 97, developed 1000 feet with oil after plugging back from 3377 feet to 3160 feet. This test was drilled in 1937, and is ⅞ mile northeast of production in the Sharon Ridge field.

Winkler County: Amon G. Carter et al's Wight-Gulf 1, C SW SW PSL 29, Block 40, was drilling at 7490 feet on 7500-foot depth contract. This wildcat will probably run pipe for a retest of Tubb zone in the Clear Fork that yielded 840 feet of oil- and gas-cut mud with small volume of free oil on drill-stem test at 6673-6800 feet. Pressure was sufficient to cause the well to head twice while pulling drill pipe.

Crane County: Gulf Oil Corporation's University 1-HH, near C SW NE Sect. 3, Block 31, 4 miles north by east of nearest Devonian production in the Block 31 field, tested a small show of gas with trace of oil when tester was used in the Devonian at 8388-8428 feet, and was drilling at 8450 feet. The company assumed an obligation to drill an Ellenburger test in purchasing its supporting block of 1600 acres for $422,000 cash last June.

☆ West Central Texas

Callahan County Ellenburger Discovery Has Steady Flow

Ellenburger oil discovery in Callahan County registers steady flow; Manning-O'Connor field completes 16th producer from the Bend; Ellenburger failure in Shackelford County.

Callahan County: E. E. Fogelson and M. S. Ingleright's Baum-Swafford 1, G. M. Vidal Survey, established first deep production for the Baum shallow pool in flowing natural into pits while cleaning itself from open hole at 3840-58 feet. No estimates have been made on the volume of oil, but the gas pressure is ample to afford steady flow without acidizing. The Ellenburger was entered at 3838 feet, with elevation of 1773 feet. This deep strike is on acreage farmed out by Dean Bros., who worked the subsurface for the location of the prospect.

Stephens County: Fred Manning, Inc.'s O'Connor 12, NE NW NE T&P Railway 52, Block 7, flowed 225 barrels of 43-gravity oil initial through choke from Bend at 3230-80 feet, making the 16th producer for the area. First oil production was established last May through the deepening of a Bend gasser, and development has been continuous.

Shackelford County: Standard Oil Company of Kansas' Green 1-D, C SW NW T&P Ry. 68, Block, 12 tested dry at 4898 feet in Ellenburger, topped at 4800 feet, and was due to continue to the water level before abandoning.

☆ North Texas

Show of Gas in Strawn Logged By Collin County Prospect

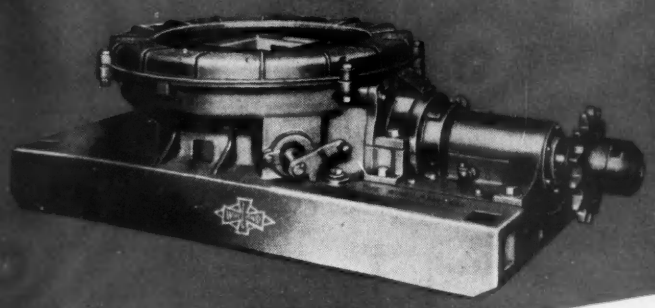
Collin County wildcat has gas show in Strawn; new drilling depth record given district by Grayson County wildcat; major extension given Middle Strawn pay in Joy field.

Collin County: Standard Oil Company of Texas' Newsome 1, John W. Cox Survey A-159, 1½ miles east by north of Frisco, logged a show of gas in Strawn at 5580-5600 feet. A drill-stem test of the zone failed. A test at 5562-5679 feet yielded 30 feet of gas-cut mud, and drilling was resumed. This projected Ellenburger test is on a 15,000-acre block taken after extensive geophysical operations.

Grayson County: Denver Producing & Refining Company's Rich 1, I&GN Railway Survey, A-1439, 5 miles south by east of the Handy shallow oil and gas field, was drilling shale at 11,560 feet for a new depth record for the district. This wildcat has logged in excess of 1300 feet of Simpson shale.

L. O. McMillan and Sherman Hunt's Thorn 2, twin to a 5005-foot junked hole in the Handy area, was drilling at 4995 feet.

Clay County: Shell Oil Company's Houston 4, Block 11, H. Williams Survey, extended the Middle Strawn oil pay to the south edge of the Joy field in



Bulletin No. 169 — Wheland High Speed, Oil Bath Rotary. 20½" opening through table.

Bulletin No. 167. Wheland Swivel. Capacity, 464,300 pounds at 100 R.P.M.

We share the owner's pride in

TRADE WHELAND MARK

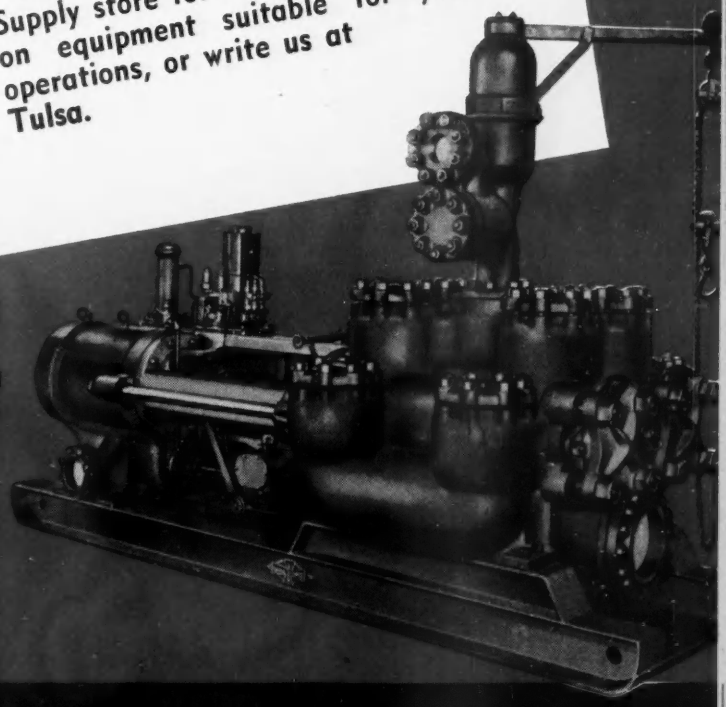
DRILLING EQUIPMENT

Pride ranks right along with the profit motive in conducting a sound business enterprise.

No driller using equipment from his Jones & Laughlin Supply store can fail to be proud of his own good judgment.

The entire drilling industry respects such justly famous products as J&L Integral-Joint Drill Pipe, J&L Wire Lines, Lucey Boilers, Wilson Mfg. Co. Power Rigs, Republic Drilling Hose and Belting, Dreadnaught Drawworks, Crown Blocks and Traveling Blocks, Whitlock Cordage and—Wheland Steam & Power Slush Pumps, Swivels and Rotaries.

Ask at your Jones & Laughlin Supply store for Wheland bulletins on equipment suitable for your operations, or write us at Tulsa.



Bulletin No. 153-AA. Wheland Duplex Steam Slush Pump. 5½" x 8" x 20".

JONES & LAUGHLIN SUPPLY COMPANY General Export Office: 230 Park Ave., New York 17, N. Y., U. S. A.

LUCEY and WHELAND Export: Lucey Export Corporation, 233 Broadway, New York 7, N. Y., U. S. A. Broad Street House, E. C. 2, London, England.

JONES & LAUGHLIN SUPPLY COMPANY

Subsidiary of Jones & Laughlin Steel Corporation

J&L STEEL

TULSA, OKLAHOMA

developing oil flow by heads from open hole at 4487-4604 feet. This sand was uncovered in the north portion of the field in August, 1945.

Three rotaries are being operated by Jack Grace et al in the development of holdings in the East Henrietta field, west flank of the Worsham structure.

Montague County: Continental Oil Company's Hardison 1, N. S. Ussery Survey and an offset to its Lewis-Steward pool discovery, proved dry in drilling the Simpson to 6617 feet. Pipe has been cemented at 6475 feet to perforate opposite Bend conglomerate saturation at 6341-62 feet. The overlying Bend lime also indicated probable oil production in this well and the discovery.

☆ East Texas

Fairfield Deep Test Credited With Topping Smackover Lime

Deep test in Fairfield area credited with having reached the Smackover lime; pipe set for completion of Cherokee County wildcat from several promising deep horizons; wildcats fail in Franklin and Wood counties.

Freestone County: The Texas Company's White 1, Wm. King Survey and 5500 feet west of Travis Peak gas production in the Fairfield field, was coring hard lime at 13,065 feet. It is believed to be in the Smackover limestone. No shows have been recorded since logging high-pressure gas from a porous zone at 11,286-332 feet in Cotton Valley, topped near the 9800-foot level. The well constantly threatens to blow out due to the gas thinning the rotary fluid when the weight of the mud drops below 12.2 pounds, while mud in excess of 12.5 pounds in weight results in the formation thiefing the rotary fluid. A similar condition prevailed in the Chapel Hill field, Smith County, when Sinclair Prairie Oil Company's Shofner 1 explored barren Smackover then junked the hole while trying to make a gasser from the Cotton Valley.

Cherokee County: Standard Oil Company of Texas' New Birmingham 1, 10 miles southeast of Boggy Creek field, nearest production, was setting 5½-inch pipe on bottom at 10,015 feet in red shale after establishing the water level in the Travis Peak, topped at 9508 feet. This wildcat will try for completion from promising oil shows in the Travis Peak, while it indicated commercial gas-distillate flow from the James and Bacon limes.

Two new producers, making a total of 5, are assured for the Wise narrow field opened last August, while the area is expected to yield possibly 15 producers on the faulted structure. W. W. Wise and Delta Drilling Company's Gardiner 1, Levi Jordan Survey, extended production northwest in flowing 10 barrels of oil hourly through ¼-inch choke while cleaning itself from Woodbine sand at 5166-73 feet. Central Pipe Line Company's Wilcox 1, southwest corner of a 75-acre lease, was running pipe after confirming production with a drill-stem test at 5108 feet.

Failures: Humble Oil & Refining Company's Jaggers 1, John Humphries Survey, Franklin County, was abandoned without shows in the Travis Peak at 7455 feet. In Wood County, Haynes B. Ownby, Trustee's Harry Bros.-Sun 1, 3½ miles southwest of Quitman, quit in water sand at 5510 feet, having entered the Woodbine at 5290 feet.

Wood County: Shell Oil Company's Goldsmith 12, Smackover test for the Quitman field, was drilling Rodessa lime at 8160 feet, having cemented 9⅝-inch pipe at 7924 feet to protect indicated gas-distillate production in the Bacon at 7820-73 feet. Humble's McKnight 1, northeast edge of the Hawkins field, was coring at 10,350 feet in Travis Peak, topped at 9556 feet.

Leon County: Daniel Oil Company's Cox 1, John Scritchfield Survey and 1½ miles west by south of the Woodbine discovery pumper for the Flynn area, was flowing 50 to 60 barrels of 33-gravity oil daily through ¼-inch choke from perforations between 7036-7428 feet. Pumping unit will be installed. United North & South Development Company's Oden 1, 1⅓ miles northwest of this confirmation well, has squeezed perforations between 6887 feet and 7337 feet after swabbing oil, mud and water, and will reperforate. Oden 1 logged the greatest amount of effective oil pay in the Woodbine, topped at 6900 feet, and is highest of the trio on the large structure, but has been unable to exclude water from above, or below the pay.

Shelby County: B. F. Phillips' Pickering Lumber Company 1, G. Russell Survey, 3 miles north of Shelbyville, was idle awaiting parts for rig repairs before proceeding with test in the Pettit zone. The last core, at 6493-510 feet, recovered gray and brown oolitic lime with some porosity stain and oil color. A higher cut at 6475-93 feet got dense shaley lime without show. With elevation of 252 feet, the test topped the Pettit at 6255 feet. This well is 1 mile east of an unsuccessful test drilled by Paul Pewitt.

Marion County: Magnolia Petroleum Company-Tide Water Associated Oil Company-Seaboard Oil Company's Hall Estate 1, Myles Moody Survey, Lasater area, was coring the Travis Peak horizon. A cut at 8056-65 feet recovered slightly porous sand with a little odor; another at 8021-24 brought white sand with salty taste. Elevation is 401 feet. The Travis Peak was topped at 7584 feet by survey. With a reported view of drilling a Travis Peak test, Mid-States Oil Corporation continued adding to its holdings in Jefferson townsite.

Angelina County: D. Harold Byrd et al's Angelina County Lumber Company 1, Jesus Garza Survey, 3 miles south of Wells, was going ahead with drilling through the top of the Woodbine with no shows. With elevation of 353 feet, the Woodbine came in at 6500-foot depth, and cores were cut below that depth, but nothing of interest was reported.

Nomads Hear Eby

Dr. J. Brian Eby, consulting geologist of Houston, who recently returned from a six weeks' stay in Europe where he represented THE OIL WEEKLY, described conditions of the oil industry in Austria at the December meeting of the Houston Chapter, Nomads. L. A. Summers of Creole Petroleum Company, Maracaibo, Venezuela, was the only international visitor present.

Officers will be elected at the regular January 13 meeting and will be installed at a dinner dance at the Rice Hotel January 24.

☆ Southwest Texas

Duval County Sejita Field Extension Tests on Pump

Sejita extension testing on the pump; outpost at Piedras Pintas recovers oil on drill-stem test; casing set in wildcat southeast of La Reforma; wildcat north of Roma to go on pump after swabbing oil.

Duval County: Magnolia Petroleum Company's Ramirez Estate 1, ½ mile extension test on the west flank of Sejita field, has been put on pump and was testing 40 barrels of oil per day. Total depth is 5835 feet with 7-inch casing set on bottom and perforated for completion at 5752-67 feet. It is in the San Pedro de Charco Redondo Grant.

The Texas Company's Peters Fee 1, outpost ½ mile southeast of Piedras Pintas production, was testing after recovering oil on drill-stem test. The test, made at 6171-86 feet, recovered 110 feet of 44.5-gravity oil, 330 feet of oil-cut mud and 60 feet of water in 2 hours, working pressure 7 pounds. Total depth is 6608 feet with 5½-inch casing set to 6350 feet. A previous drill-stem test at 6171-82 feet flowed salt water and 1 percent 40-gravity oil.

Starr County: Casing has been set in Baldridge & King's A. Guerra 1-B, wildcat a mile southeast of La Reforma field. Oil was tested in drill-stem tests at 6010-21 and 6048-56 feet. Total depth is 7505 feet with 5½-inch casing set to 7400 feet. The test is in San Jose Grant, A-78.

Tarver & Staggs' Loreto Canales 1, wildcat 23 miles north of Roma, is to be tested on pump after swabbing 20 barrels of oil daily. Total depth is 1715 feet with 5½-inch casing set to 1700 feet and 3-inch liner below that to the bottom of the hole. Perforations are at 1707-14 feet and gravity of the oil is 42.

Award Service Pins

Approximately 2400 employes of Cities Service Oil Company and Empire Pipeline Company throughout the United States, have been cited for their service to the companies, and have received service pins.

Two employes received 40-year awards; 34 got 30 year pins, and 262 were given 25-year awards. The two 40-year men are C. E. Murray, Bartlesville, Okla., vice president and secretary of Cities Service Oil Company, and W. H. Merritt, Chicago, vice president and manager of the marketing division of Cities Service.

Dual Completions Approved

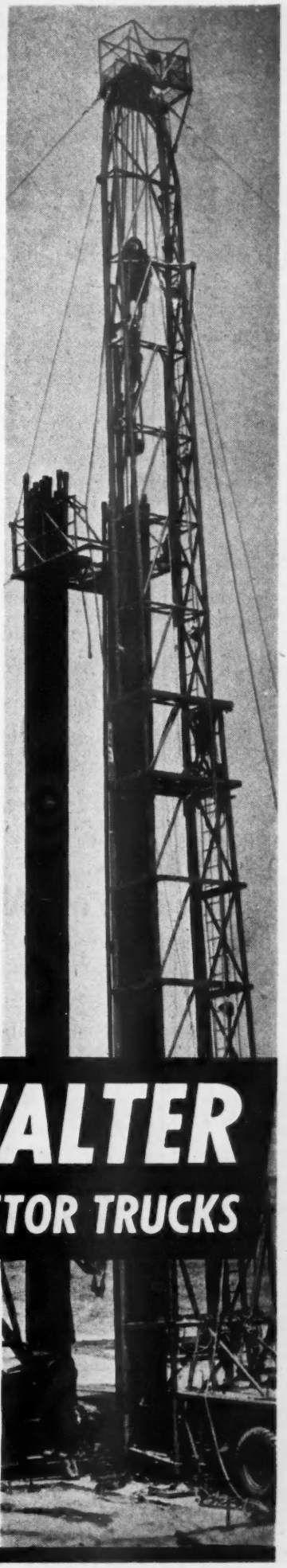
The Oklahoma Corporation Commission has granted permits for the dual completion of three wells in three pools.

The commission authorized Frank Russell to produce his well in NE NW NE 22-5n-4w, North Lindsay pool, from both the Viola lime and the Bromide sand. The Atlantic Refining Company has been permitted to produce Trindle 6, CNW NE 26-15n-5w, in Kingfisher County, from the Bartlesville sand and the Hunton lime. Permit was granted Wood Oil Company to complete Siler 3, SW NE NE 30-10n-3w, in the West Moore pool, from both the Bartlesville and Hunton zones.

PLANNING BIGGER RIGS?

Here's the solution to transportation . . .

Haul with WALTER TRACTOR TRUCKS



TO reach new sources of oil, wells are going deeper—rigs are getting bigger, more powerful. Are your *trucks* keeping pace?

Walter Tractor Trucks are powered and engineered to haul your biggest rigs and equipment to any drill site—no matter how remote the location, or difficult the running conditions. They are especially designed for off-the-road hauling, having the unfailing four-wheel traction to pull enormous loads through mud, sand, soft dirt, over slippery surfaces and up steep grades.

Only Walter Tractor Trucks have the four-point positive drive, in which three automatic locking differentials proportion the power to each wheel according to its traction at any instant. Wheels with most traction get the most power. There is never wheel spinning to bog down loads; always steady tractive power to keep loads moving.

Along with this great feature, you get suspended double reduction drive, tractor type transmission, short wheel-base, hydraulic steering, powerful air brakes. Models from 125 hp. to 350 hp. Write today for detailed literature on Walter Tractor Trucks.

WALTER MOTOR TRUCK CO.

1001-19 Irving Ave.,
Ridgewood 27,
Queens, L. I., N.Y.

WALTER TRACTOR TRUCKS

The
BOOK of OIL MEN'S ANSWERS

Yes, the answers to many an oil man's questions will be found in the big, annual . . .

YEARBOOK FORECAST

number of *The Oil Weekly* which will be published early in 1947.

Our editors are already hard at work interviewing oil industry leaders, discussing probable developments, analyzing and classifying opinions and predictions—all to give you quick-as-a-glance information about trends and activities that may be expected during 1947 in the drilling, producing, pipe line industry.

WATCH for it . . . . EARLY IN '47

If your subscription is about to expire, be sure to renew now. If you are not yet a subscriber—well, this is a good time to take the step so you'll surely have your own personal copy of this big, special issue.

TELL A FRIEND ABOUT IT

Send me The Oil Weekly

Here's my check for ☐ 3 years for $4; ☐ 2 years for $3; ☐ 1 year for $2.

Name_____ Position_____

Company_____

Street and No._____

City and State_____

Check Branch of Industry { ☐ Drilling Contractor ☐ Pipe Line ☐ Individual Producer ☐ Producing Company ☐ Manufacturer ☐ Service ☐ Supply

Mail to Box 2608, Houston, Texas. Only ACTIVE OIL MEN may subscribe.

☆ South Central Texas

Zavala County Wildcat Goes On Pump for Completion

Zavala County wildcat going on pump; wildcat west of Jourdanton has small condensate show; Shell's rock Springs wildcat has oil show; Luling outpost to go on pump.

Zavala County: The Texas Company's Northeast Farming Company 1, discovery 6 miles north-northwest of Crystal City, is being put on pump for completion. Total depth is 3372 feet with 7-inch casing set on top of pay at 3300 feet. The well was shot with nitro and has had trouble with cavings, which are being cleaned out before completion. Twenty barrels of oil were bailed initially from the well.

Atascosa County: Humble Oil & Refining Company's SPJSA Lodge 1, wildcat a mile west of Jourdanton field, recovered a little condensate on a drill-stem test at 7145-65 feet and is now coring in lime and chert below 7221 feet.

Edwards County: Shell Oil Company's J. H. Brown 1, wildcat 5 miles northeast of Rock Springs, recovered a little oil on a drill-stem test at 4975-5075 feet, bottom hole pressure flowing being 200 pounds and shutin 1800 pounds.

Guadalupe County: Wiegand Well Servicing Company's L. A. Anderson 1, outpost ½-mile southwest of Luling field is to go on pump. Total depth is 2050 feet with 5½-inch casing set to 1850 feet and open hole acidized with 4000 gallons. The well flowed about 2½ barrels of oil daily. Production is from the Austin chalk, topped at 1847 feet. This test is located in Harriet Cottle Survey 14.

Fogarty With RMOG

Frank C. Fogarty, formerly wih PAW and recently with the Gray Refinery at Newcastle, Wyoming, has been named executive secretary of the Rocky Mountain Oil & Gas Association. He will succeed H. O. English who resigned to become manager of the oil department of the Casper National Bank.

☆ Lower Texas Coast

Texas' Willacy County Test Drilling Below 14,671 Feet

Texas Company's deep Willacy County test drilling below 14,671 feet; production gauged at Farenthold field discovery; second well at Farenthold shows for production; northwest extension at North Minnie Bock testing; Hidalgo County wildcat completing in gas sands; second Schartz field producer being completed; Fayette County wildcat swabbing oil from perforations in Wilcox.

Willacy County: Deepest test ever drilled on the Lower Texas Coast and deepest ever drilled by The Texas Company is the Yturria Land and Livestock Company 6, now below 14,671 feet. Located on the Yturria Ranch in the Raymondville vicinity, the test is projected through the entire Frio section. Baldridge and King are contractors.

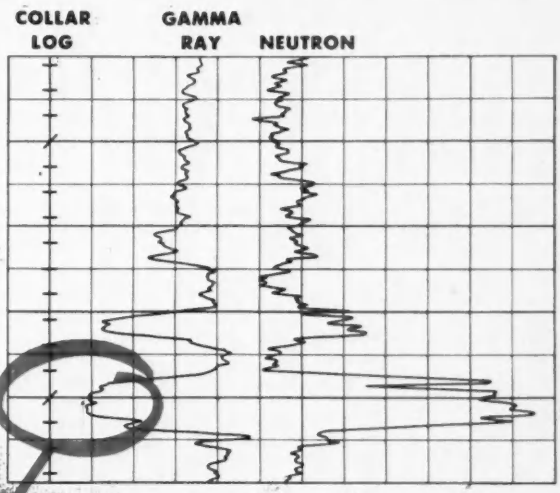
Nueces County: Rand Morgan's Gee 1-A, new field discovery a mile northeast of Richard King field, flowed 33 barrels of oil daily through 5/64-inch choke with

LANE-WELLS SYSTEM OF COLLAR LOCATION

—ELIMINATES MEASUREMENT VARIABLES

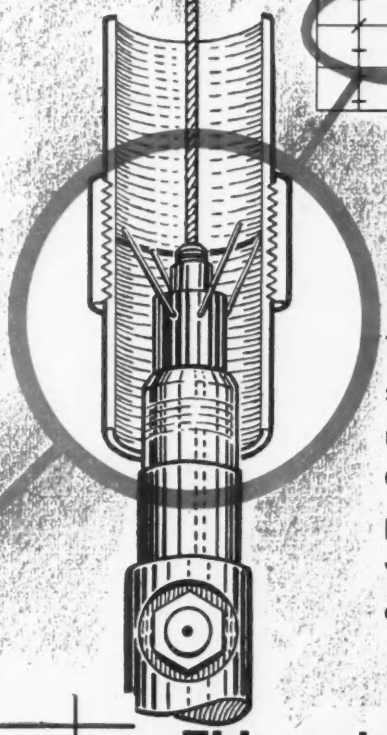
—PERMITS EXACT PERFORATION PLACEMENT

Once casing is set and cemented the relationship between collars and formation is fixed. The collars become accurate bench marks for all subsequent well operations. By means of two simple steps—one electrical and the other mechanical—Lane-Wells uses this fixed relationship to assure accurate placement of gun perforations.



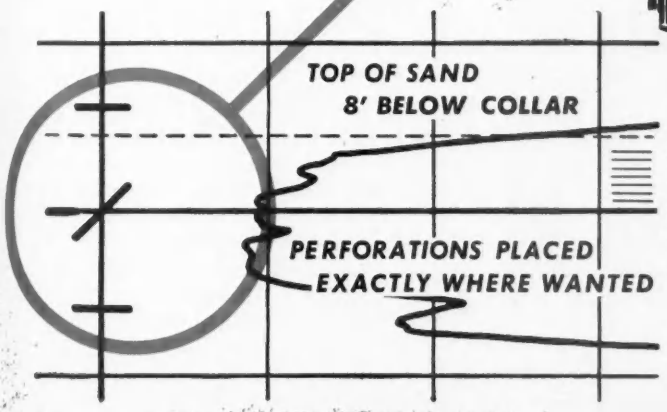
Step #1

The location of collars is recorded electrically with Radioactivity Logging equipment, and each collar is shown on the Log in its fixed relationship to the formation curve. The Collar Log is not charged for when run with a Radioactivity Well Log, but is furnished as an additional feature to provide Oil Well Operators with more useful information about their wells.



Step #2

The reference collar nearest the shooting zone is picked up by the mechanical Collar Locator on the Gun Perforator. This permits accurate perforating even in the thinnest sands without references to bottom or to artificially placed formation markers.



This extreme accuracy saves you time and trouble in...

TESTING OPERATIONS
PLUGBACK OPERATIONS
SQUEEZE CEMENTING
ACIDIZING

"Call Lane-Wells and have the job done right"

LANE-WELLS COMPANY

Tomorrow's Tools—Today!

Los Angeles—Houston—Oklahoma City

General Offices, Export Offices and Plant:

5610 S. Soto St., Los Angeles 11, California

24-HOUR SERVICE 38 BRANCHES

1500 pounds tubing pressure and 2040 pounds casing pressure. Total depth is 5848 feet and production is from perforations at 5605-09 feet. This new field has been named Farenthold.

Second well in this field is Southern Minerals Corporation's King 1-D, 1600 feet south-southeast of Morgan's discovery. A drill-stem test at 5608-11 feet recovered 980 feet of oil and 20 feet of oil-cut mud with 90 pounds working pressure, test being on ¼-inch choke with tool open 8 minutes. This well is 4130 feet northeast of the King 35, nearest well at Richard King field.

The Atlantic Refining Company's Lee M. Dugger 1 2900-foot northwest extension test at North Minnie Bock field, flowed 5 barrels of 36.9-gravity oil hourly on 3/16-inch choke on initial tests. Gas-oil ratio was 515/1 and tubing pressure 200 pounds. Total depth is 8510 feet with 7-inch casing set to 8475 feet and perforated for completion at 6138-43 feet. Nearest producer is the same company's Wright 1, previous northwest extension well.

Hidalgo County: Roger Lacy's Fee 1, wildcat 6 miles north-northeast of Mercedes and 1 mile west of the Cameron County line, is being completed in a gas sand with no details released. An initial test made at 7983-92 feet flowed 30.7-gravity oil but soon went to salt water. Total depth is 10,713 feet with 5¼-inch casing set to 8000 feet.

Live Oak County: Second producer in the new Schwartz field is Henshaw Bothers et al's Felix Lopez 1, flowing 10 barrels of oil hourly through 9/64-inch choke. Total depth is 4001 feet with 5½-inch casing set on bottom and perforated for completion at 3983-88 feet. This well is 700 feet southwest of the Schwartz 1 discovery.

Fayette County: Standard Oil Company of Kansas' August Pietsch 1, wildcat 8 miles north of LaGrange, is reported swabbing oil from perforations in the Wilcox. Total depth is 6918 feet with 5½-inch casing set to 6641 feet.

☆ Upper Texas Coast

New Sand Discovered on Flank Of Hull Field, Liberty County

New sand discovered on Hull field's east flank; discovery in Tide Haven field area waiting on tankage; Magnolia locates test at Hockley Dome; extension well at Nada being completed in new sand.

Liberty County: American Republics Corporation's Dolbear 176 has discovered a new deep oil sand on the east flank of Hull field. The well flowed on potential 138 barrels of 41.8-gravity oil daily through 13/64-inch choke with 800 pounds flowing pressure on the tubing and gas-oil ratio of 892/1. Total depth is 6950 feet with production from perforations at 5085-90 feet in the Middle Yegua. This well is in the J. Devore League, 467 feet north and a little east of the Dolbear 175.

Matagorda County: Ralph Johnston et al's Surkamp 1, discovery in the Tide Haven field area, is waiting on erection of tanks and separator for official gauge. Perforations have been made at 8533-35 feet for completion. Total depth is 10,055 feet with 5½-inch casing set to 9470 feet. This well is 9700 feet south and a little west of Magnolia Petroleum Company's Live Oak Farms 1, discovery well at Tide Haven, and 7000 feet southwest of Johnston's condensate producer in the area.

Harris County: Magnolia has located Warren Ranch 5 as another test at Hockley dome. It is 460 feet north and west of the No. 2 discovery for the field. More than 100 wildcats were drilled on the Hockley Dome before production was discovered in 1945. However, now each well must be considered as a wildcat as production in the Warren 2 comes from the cap rock located under a salt overhang.

Colorado County: The Ohio Oil Company's Nada Unit 1-A, 3000-foot southwest extensioner at Nada field, is being completed in a new pay sand. Total depth is 10,332 feet with 5½-inch casing set to 9801 feet and perforated for completion at 9906-10 feet. Initial tests showed mostly wash water and gas, flowing pressure on the tubing being 2800 pounds, using 9/64-inch choke.

☆ South Louisiana

Jeff Davis Parish Test Has New Pay in South Jennings

New deep sand discovered at South Jennings; Tuscaloosa confirmation try at Big Island testing deep sand; Humble's Kaplan area wildcat swabbing; wildcat northeast of Bayou Mallet showing for gas-condensate production; Magnolia locates second Gulf of Mexico wildcat; potential run on Barnsdall's new field opener.

Jeff Davis Parish: Stanolind Oil & Gas Company's South Jennings Unit 8 has been completed in a new high pressure deep sand at South Jennings field. From perforations at 10,925-936 feet the well flowed 45 barrels of condensate daily through 6/64-inch choke with tubing pressure 6800 pounds and gas-oil ratio 16,558/1. Total depth is 12,034 feet with 7-inch pipe set to 10,625 feet and 5-inch liner to 11,650 feet. The well is in 15-10s-3w.

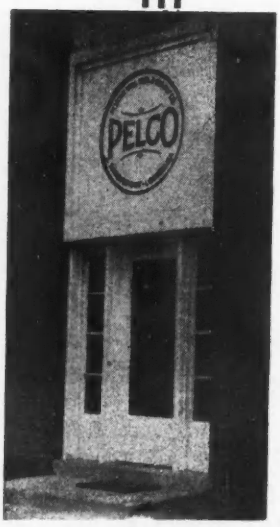
Rapides Parish: Union Producing Company et al's John Tyler 1, Tuscaloosa sand confirmation test at Big Island field, is showing for production in tests of open hole at 10,066-074 feet. This is a deeper sand than that of the discovery, which produces from perforations at 9714-22 feet and 9684-9700 feet. Discovery of Tuscaloosa sand production in the field is the Belgard 1, ½ mile to the west in NE NE 14-4n-3e. A drill-stem test made by Tyler 1 at 9684-9700 feet recovered 108 stands of gas-cut mud and some free oil after which it flowed a small amount of oil and gas with 1100 pounds pressure, using ¾- and ¼-inch chokes.

Vermilion Parish: Humble Oil & Refining Company's Alfred Romaine et al 1, wildcat in the Kaplan area, is still testing. Casing has been perforated at 11,060-068 feet where hole is being swabbed. Total depth is 12,482 feet with 5½-inch casing set to 11,876 feet. A previous test at 11,065-071 feet flowed 102 barrels of oil and the same amount of water. These perforations were squeezed in an attempt to shut off the water flow.

St. Landry Parish: Stanolind Oil & Gas Company's Ezeb Guillory 1, wildcat 2 miles northeast of Bayou Mallet field in 29-6s-2e, is showing for a gas-condensate discovery. Tubing was run

Help!

Several million fellows recently bet their lives on this country. Some lost. As a matter of fact they all lost if the new congress functions like the New Deal. A lot of doing will have to be undone. A lot of bureaus will have to be abolished. A lot of very raw damned foolishness will have to be breaded in common sense and fried in elbow grease. Let's help our congressman by being articulate. No man does his best work unless the boss takes an interest.



WE'VE SUPPLIED OIL MEN IN OUR AREA FOR 38 YEARS

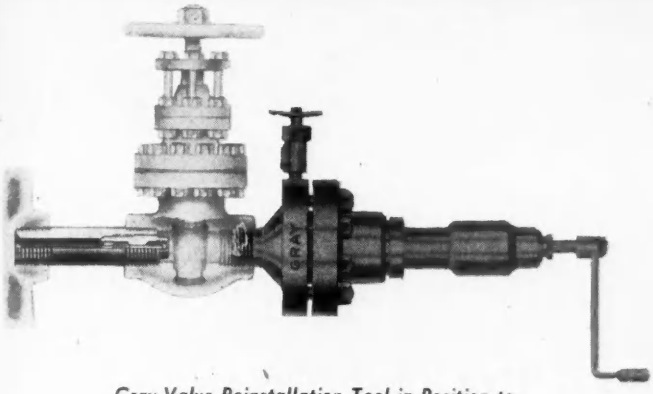
PELICAN WELL TOOL & SUPPLY CO.

SHREVEPORT
LOUISIANA

PELCO

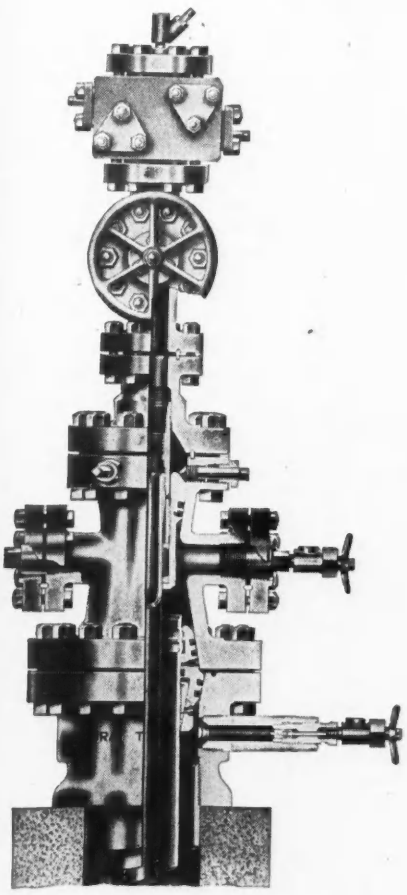
Berwick
New Iberia
Lake Charles

THIS PART CONTRIBUTES TO THE OVERALL ADVANTAGES OF GRAY COMPLETELY COORDINATED SYSTEMS OF WELL CONTROL



Gray Valve Reinstallation Tool in Position to Install Valve on Gray Reinstallation Nipple

Gray Valve Reinstallation



Complete Well Head Assembly equipped with Composite Manifold, Valve Removal, Installation and Renewal.

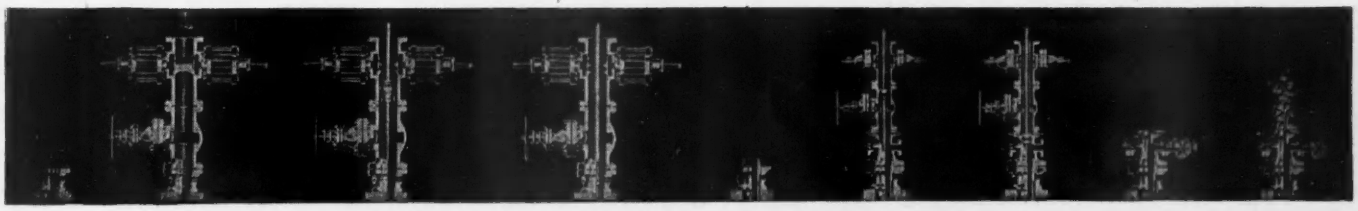
The best place for a casing outlet valve or any other part which has completed its operating function is in the warehouse. After it becomes corroded and stuck through non-use on the well, the disc must be drilled out, and, while this job can now be performed with Gray Valve Removal Tools, it is unnecessary. If valves are left on the well, bonnet gaskets can possibly disintegrate and cause trouble. If pressure develops in the annulus, it will be recorded by gauge attached to the Valve Reinstallation Plug. If a valve is ever needed, it can be easily reinstalled and plug removed to permit flow, with Reinstallation Tool as illustrated.

This part contributes to the overall advantages of Gray completely coordinated Systems of Well Control.

GRAY
TOOL COMPANY
HOUSTON

Export Representative: GUY E. DANIELS, 30 Rockefeller Plaza, New York City
Rocky Mountain Representative: CARL MOULDEN, P. O. Box 1890, Casper, Wyo.
Mexico Representative: W. Y. DEMOUCHE, Paris 12, Mexico City, D. F.

CONTROL DURING AND BETWEEN ALL OPERATIONS WITH GRAY PLANNED PROCEDURE



Casing Head Attached | **Drilling** | **Running Casing** | **Casing Landed** | **Drilling Control Equipment Removed** | **Drilling-in and Running Tubing** | **Tubing Landed** | **Control Equipment Removed** | **Manifold Attached**

after gas-condensate was tested from performations at 8952-58 feet. Total depth is 9861 feet with 5½-inch casing set on bottom.

St. Mary Parish: Magnolia Petroleum Company has located another test in the Gulf of Mexico. This wildcat will be drilled on State Lease 684, Block 94, and projected total depth is 3000 feet.

Beauregard Parish: Barnsdall Oil Company's Long Bell Lumber Company 1, new field opener 4 miles north of Gordon field, flowed on potential 293 barrels of 49.3-gravity oil daily through 9/64-inch choke. Total depth is 8430 feet with 7-inch casing set on bottom and perforated for completion in the Cockfield at 8236-53 feet. The Louisiana Conservation Commission lists the new field as Seale, whereas Barnsdall calls it Longville.

☆ North Louisiana

DeSoto Parish Wildcat May Be Good Shallow Producer

DeSoto Parish has prospective producer midway between Grand Cane and Stonewall; Caddo field deep test swabs good oil show.

DeSoto Parish: F. A. Callery's Bessie C. Strauss, 19-14n-14w, wildcat 7 miles south by west of Stonewall and approximately an equal distance north by west of Grand Cane, seems good for a shallow producer. The test was swabbed down for 24 hours with 2500 feet of fluid in the hole and some water and mud. It flowed into pits 3 to 4 barrels per hour, 60 percent of which was considered oil, and was then shut in to build up pressure. Tubing and casing pressures run 500 and 650 pounds, but the well may have to be completed on pump. Total depth is 7083 feet, with casing set at 4060 feet. Perforations are from 4070-77 feet in the Glenrose.

Caddo Parish: N. A. Hendrickson et al's Muslow 1, deep test in 5-20-15w, Pine Island field, was reported swabbing a good oil show, with some water, after perforating at 3590-3604 feet. Little information has been forthcoming as to what was found below present testing level, but salt water was reported around 7330 feet.

Stanolind Oil & Gas Company's Fred Wappler 1, C NE SW 20-17n-16w, wildcat 2 miles southwest of Greenwood, is drilling below 4960 feet. A core from 4833-53 feet, believed to be in the Hill section of the Rodessa, recovered lime with spotted showing of oil, and a cut from 4853-70 recovered dense lime with streaks of light oil stain. A drill-stem test found no indication of oil or gas. The well will go to the Travis Peak.

Integrated Barge Fleets Said Ideal for Oil Loads

Integrated barge fleets which offer reduced resistance and increased capacity at no increase in costs of construction over the old-fashioned barge, are in the offing according to Allan B. Murray, assistant director of the Stevens Institute of Technology laboratory.

Such an integrated fleet, he explained, is built to function as a unit, and the bows of the forward barges and the sterns of the after barges are raked, the whole forming what closely approximates in design a large single barge.

Murray pointed out that for petroleum transportation, where barges can be uniformly loaded for a long trip, such equipment is ideal.

Compared with the conventional type, Murray showed a reduction of resistance of 13 percent at six miles per hour with a seven-foot draft in nine feet of water. The gain in speed was 4½ percent, and translated into carrying power this represents almost 7000 barrels of gasoline, or 19 percent in load.

☆ Arkansas

Columbia Wildcat to Test; Atlanta Field Is Extended

Columbia County wildcat shut in for tests pending completion of tanks; Atlanta field extended ½ mile north.

Columbia County: McAlester Fuel Oil Company's Warnock Estate A-1, NW SE 6-17s-19w, wildcat bottomed at 7417 feet with porosity topped at 7402 feet, is shut in for test pending completion of tankage. The well, producer of gas-distillate, is 5 miles northeast of Magnolia.

Tide Water Associated Oil Company's T. J. Eads 1, 8-18-19, was finaled flowing 101 barrels of 44.5-gravity oil per day on ⅛-inch choke. Gas-oil ratio is 680/1. The well is ½ mile north of Atlanta field production.

Miller County: Charles M. Kerns and R. F. Bolster are taking Lincoln National Life Insurance Company 1, NW 15-18s-26w, 7 miles southeast of Fouke, past its 5500-foot contract depth. The wildcat is drilling below 5529 feet and will penetrate all the anhydrite before terminating drilling.

Ashley County: McAlester Fuel Company was preparing to retest Crossett 1, C NE NE 25-17s-6w, wildcat near Hamburg. Perforations and squeeze-off jobs were made at 3000-12, 3046-56 and 3145-55 feet. Total depth is 4547 feet. The company acquired the test from Albert Plummer, and has picked up considerable acreage in Twps. 16 and 17 south, Range 7 west.

Co-Ops' Tax Exemption To Be Studied By API

An 11-member American Petroleum Institute committee has been named by W. R. Boyd, Jr., API president, to submit recommendations to the board of directors as to an API policy on the question of tax equality for cooperatives.

The group, headed by John C. Case, Socony-Vacuum Oil Company, may report to the next board meeting (Washington, January 22). The creation of the committee is a result of the National Tax Equality Association request that API make a study of the tax question.

Meantime, the National Tax Equality Association reports that Congressman Harold Knutson of Minnesota, chairman of the next Ways and Means Committee, is expected to introduce a bill to the new Congress to reduce certain excise taxes and also to make "important administrative changes," in the present revenue law.

The most important administrative change now under consideration, the association says, is the proposal to tax cooperatives and other competitive business organizations now exempt from federal income taxation.

☆ Mississippi

Brookhaven Field Extension Attempt Looks Favorable

Northwest extension attempt at Brookhaven looks favorable; LaGrange extension completed.

Lincoln County: Crescent Drilling Company's J. F. Vernon 1, SEc 31-8n-7e, ¾ mile northwest of Brookhaven field production, appears certain to make a commercial producer if salt water input can be eliminated. After establishing production in the Massive sand zone at 10,467-90 feet, the well was swabbed and on a 17-hour test recovered 51 barrels of oil and 30 barrels of salt water. Driller was preparing to put the well on pump.

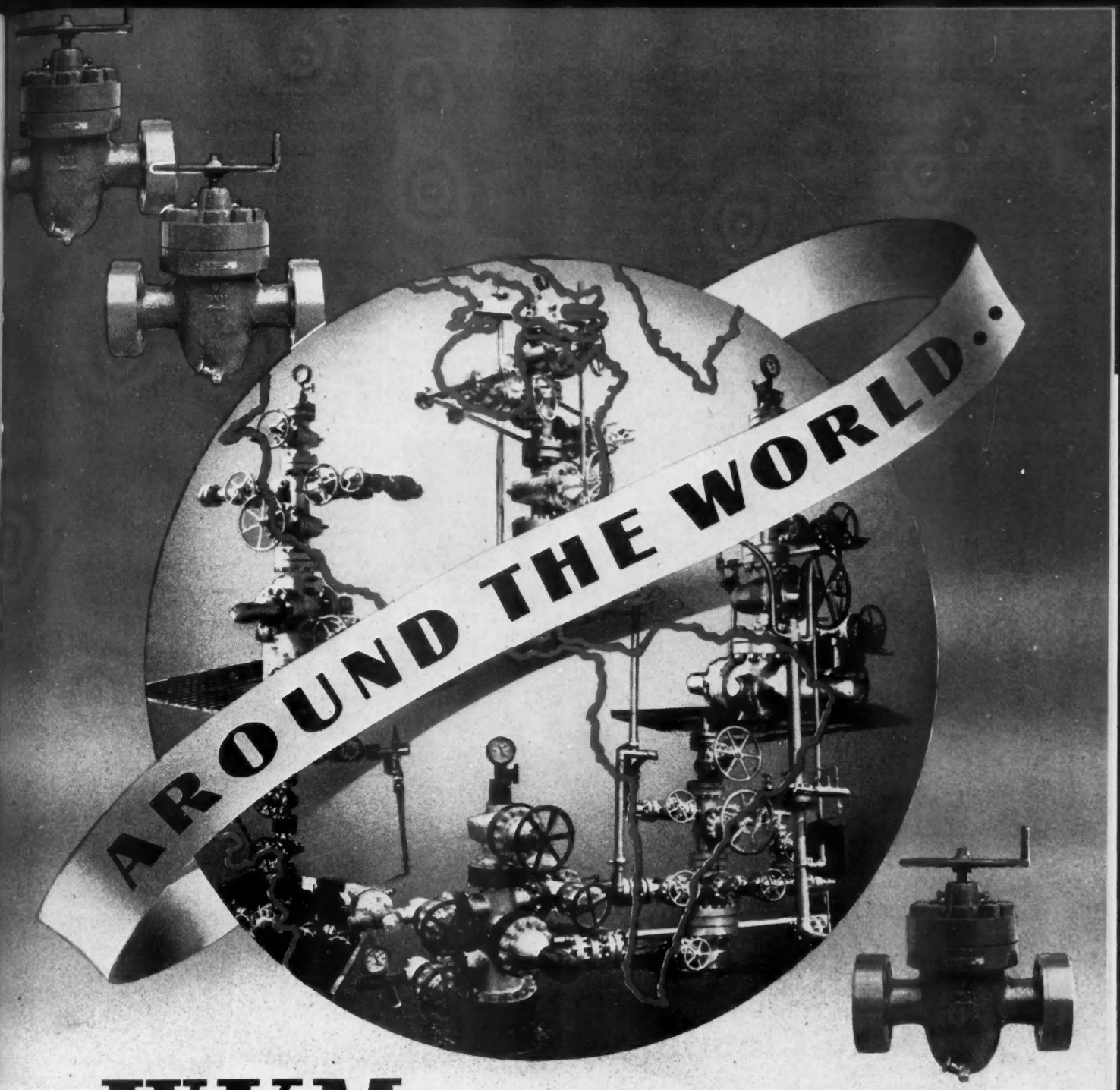
Roeser & Pendleton's J. Wroten 1, NW SW 20-7n-7e, which will extend Brookhaven ¾ mile south if successfully completed, has set production string and was putting the well on pump after making a good section of saturation in the Massive sand zone. Roesser & Pendleton's E. H. Day 1, NW NE 20-7n-7e, has been completed for an excellent producer in the field with an initial production flow of 575 barrels of oil per day through ⅜-inch tubing choke. Humble Oil & Refining Company's Lincoln County Board of Supervisors 1, NEc 16-8n-5e, wildcat, has been abandoned at 10,818 feet with no shows reported.

Jefferson County: Humble's J. Fred Gordon B-1, 44-9n-1w, has been abandoned at 11,379 feet after failure to recover stuck drill pipe. Tests recovered only mud and salt water.

Adams County: Vaughey & Vaughey's R. Lee Parker 1, 9-6n-2w, LaGrange field, has extended production 2700 yards west. Casing was perforated at 6243-46 feet to tap the productive Wilcox horizon, and on initial production test the well flowed 130 barrels of 43.6-gravity oil per day. Sohio-Roeser & Pendleton's Parker Baker A-1, NWc 34-6n-2w, in LaGrange, has recovered 3 sections of saturated sand in the Wilcox zone from 6159-6206 feet. A drill-stem test at 6159-79 feet recovered 1950 feet of oil and small quantities of salty mud. A drill-stem test at 6177-86 feet recovered 2850 feet of oil and a section at 6195-6206 feet tested 720 feet of oil. Oil from the first 2 sections was 38-gravity, while that in the lower zone was 42.4. This extensive lensing would seem to indicate that ultimate commercial production on the well will be much greater than previous producers. Texas-Pacific Coal & Oil Company's O. L. Wilson 1, SWc 8-6n-2w, La Grange field is fairly certain of making a small commercial producer after flowing oil with no water. Testing continues. After successfully completing Mrs. Vic Artman 1, 36-8n-2w, to establish the new Pine Ridge field, Phillips Petroleum Company has staked Artman 2, which will be ¼ mile southeast of the discovery. Artman 1 is holding up well with an average daily production of approximately 100 barrels.

Marion County: In the Hub field Humble's A. Evans 2, SEc 15-2n-18w, is having trouble establishing production. A drill-stem test at 8230-51 feet recovered only mud and salt water in a brief test.

Jasper County: Two good producers were recorded in the Heidelberg fields. In East Heidelberg Douglas Whitaker's Waldrup 1, NEc SE NW 13-1n-12e, pumped 207 barrels per day on initial production test, while in West Heidelberg Gulf Refining Company's McDon-



W-K-M GATE VALVES

Control more than 80% of all HIGH PRESSURE WELLS..

● **Down through the years, W-K-M Through-Conduit Gate Valves have been so widely accepted by operators everywhere . . . so completely dependable under all conditions . . . that they are now in service on more than 80% of all high pressure wells in the world. And this same dependability in the extreme services make them number one choice for any service. Yes, W-K-M Gate Valves seal securely . . . easily open and close . . . last longer. And W-K-M Valves are sold and serviced by an organization with more than 25 years experience in serving the oil industry. Specify W-K-M Valves!**

W-K-M Company, In

OIL FIELD, PIPE-LINE & INDUSTRIAL EQUIPMENT

HOUSTON, TEXAS, U. S. A.

Cable Address: "WILKOMAC"

Export Office: 30 Rockefeller Plaza, New York, N

ald-Smith 1, 35-1n-12e, pumped 179 barrels per day on initial test.

Florida

Humble Oil & Refining Company's Gulf Coast Realty 9, C SE 24-48s-29e, Collier County, is drilling below 6100 feet after running electrical log. No shows have been reported. Humble's Lee Cypress 2, SEc 28-47s-29e, second exploratory attempt in the last few months, has failed because of location cratering. Humble will make a third attempt in the same area and has already made location for Lee Cypress 3.

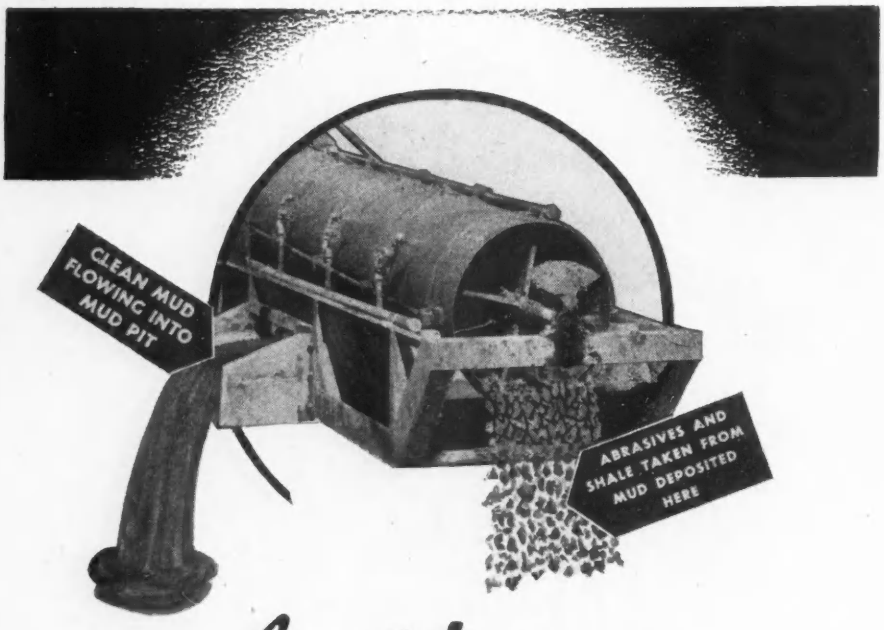
Monroe County: Gulf Refining Company's State 1, Lse 373, SWc 2-67s-29e, deep wildcat, is drilling below 14,067 feet in dolomite with no shows reported in the lower section.

Suwanee County: Sun Oil Company's Earl Odom 1, NE NE 31-5s-15e, is losing returns while working below 1200 feet. Trouble was also experienced by location cratering.

School Land Lease Gets Record High for Texas

A bid of $910,000 made December 14 for 2,492.5 acres in Crockett County set a new all-time mark for leases on University of Texas lands. The previous record was $900,000, paid for a block in Andrews County. The highest per-acre bid on December 14 was $210,000 paid as a bonus on 310 acres in Irion County.

The total bonus accepted on 25,340 acres in 58 tracts was $3,064,000. Of the 78 tracts offered in Andrews, Hudspeth, Crockett, Irion and Pecos counties, 20 were passed.



Solves Your Deep Well Mud Cleaning Problems

★ SELF-MOTIVATED
★ RECONDITIONS MUD
★ ACCURATE SAMPLES
★ UNLIMITED CAPACITY

The new and improved Thompson Model "DW" Shale Separator and Sample Machine will efficiently handle the flow of mud from the largest mud pumps now in operation. Shale and abrasives are removed, which means less wear and tear on costly drilling equipment. Attached Sample Machine is standard equipment, unless otherwise specified . . . field-tested method of obtaining accurate foot by foot samples of cuttings. Adopt the Thompson as Standard Equipment. There are two other models, each tailor-made to fit your requirements from the smallest to the largest well. Place your order through your supply dealer or direct to us . . . WE CAN DELIVER NOW!

THOMPSON TOOL CO.
IOWA PARK, TEXAS

KEEPS DRILLING MUD CLEAN — PROVIDES TRUE SAMPLES OF CUTTINGS

☆ Ohio

Lorain County's La Grange Pool Gets East Extension

La Grande extended; St. Peter test is failure; Congress well has 2 gas pays; Big Prairie extended; Hemlock Grove has 3 completions.

Lorain County: Glenn Harmon et al moved east of the Biggs to extend the lower La Grange pool to the east. H. J. Vandenberg 1, Lot 74, La Grange Township, drilled through the First Clinton, 2438-45 feet, with an open flow of 700,000 cubic feet of gas and stopped 2 feet in the second Clinton with a showing of oil. After plugging back to 2452 feet the well was tubed. The fourth well to reach to St. Peter in Pittsfield Township found water in the sand. Hanley and Bird's L. Jordon 1, Lot 73, topped the sand at 4200 feet and drilled to 4285 feet with 500 feet of water in the hole.

Wayne County: Ohio Fuel Gas Company's A. S. Massie 2, SE NW 19, Congress Township, paid in both the First and Second Clintons. Upper sand at 2936-44 feet had a gauge of 500,000 cubic feet and the lower sand showed for 1⅓ million. The well was tubed without shooting.

Holmes County: Ridgway et al Geo. E. Huston 1, SW SW 29, Ripley Township, extended the Big Prairie pool northwest. Clinton sand at 3124-44 feet showed ½ million natural and an estimated 1 million after shot.

Meigs County: The Hemlock Grove pool continues to be extended south. Two completions on the A. A. Nelson flowed 40 barrels each and Preston Oil Company's A. C. Willard, SW NW 1, Bedford Township, made 25 barrels after a shot.

☆ Michigan

Clare County Test Apparently Is Failure in Richfield

The Pure Oil Company's Marble A-1, N½ SW NW 18-17n-6w, Clare County, a 1320-foot north offset to Pure's Freer 1 gas-distillate discovery, was waiting orders at 5100 feet, apparently a failure in the Richfield. Cores and a drill-stem test indicated only a trace of gas.

Isabella County: M. B. Keeler's Johnson 1, NW NW SE 32-13n-5w, wildcat 1½ miles southwest of the Winn shallow gas field, logged Dundee at 3506 feet with a show of oil at 3509 and water at 3512-17 feet, where drilling was halted for probable abandonment.

Livingston County: Panhandle Eastern Pipeline Company's Brayton 1, NE SW NW 1-2n-4e, ½ mile southeast of the company's McPherson 1 gas discovery in the Salina at 3907 feet, was delayed in testing gas zone when casing developed a break. Test is bottomed at 3866 with unestimated amount of gas.

Collyer Honored

The medal for merit has been conferred upon John L. Collyer, president of The B. F. Goodrich Company, by Secretary of War Patterson for his outstanding service in connection with the development and production of synthetic rubber during the war and as special director of rubber programs of the War Production Board.

☆Rocky Mountain Area

Wyoming Given Seventh New Pay Discovery for Year

Wyoming has seventh new pay discovery of year; Fremont County test develops small amount of gas in Embar; Mush Creek area extended; Lincoln County, Colorado, wildcat has water in Morrison; drill-stem test fails in Liberty County, Montana, prospect.

Wyoming

The seventh new pay discovery for the year in Wyoming was made when the California Company found production in the Tensleep sand at Quealy dome, Albany County. The well, Holstz 2, C NE SE 13-17n-77w, was deepened from the Sundance sand at 3800 feet and Tensleep was topped at 5480 feet. On drill-stem test at 5480-98 feet, recovery was 3400 feet of 22-gravity black oil in 1 hour with some gas. The well was then deepened to 5654 feet in Tensleep and on drill-stem test at 5589-5654 feet, open 20 minutes, 2200 feet of fresh water was recovered. The company is now running casing to complete.

This is the first Tensleep production in the Laramie Basin of Southwestern Wyoming, and more than 10 tests of other structures in this horizon have failed to find production. However, several structures in the vicinity of Quealy Dome have not been tested to Tensleep. Quealy Dome produces from the Muddy, Dakota and Sundance sands and California now has 16 wells producing about 700 barrels of oil daily from these horizons.

Fremont County: An important test of lower horizons now being drilled by The Texas Company at Alkali Butte, Unit 4, SW NE NW 1-33n-95w, is now coring in the Embar formation and on drill-stem tests developed small amount of gas. Embar was topped at 6450 feet and the well is coring below 6550 feet. This test is 8 miles north of the Sand Draw field, which produces 1500 barrels of oil per day from 3 wells in the Tensleep. The last well drilled at Sand Draw proved large gas and distillate reserves in the Embar but this formation has not been produced in the field. The Texas test should find the Tensleep sand within the next 2 weeks.

Weston County: A well that has caused considerable excitement has extended the productive area in the Mush Creek area of Northwestern Wyoming. It is Mush Creek Oil Company's Smith 1, NW NW NE 15-44n-63w, and was drilled into the Newcastle sand at 4000 feet and found oil at 4017 feet with total depth 4018. The well started flowing by heads and made from 75 to 150 barrels of 41-gravity oil per day through casing. This is the largest producer in this area. Tubing will be run and the well put on production soon. Meantime, several major operators are checking the area and more active drilling will probably result from this extension.

Colorado

Santa Fe Corporation's wildcat at Arroya anticline, Lincoln County, in the Hugo area of Eastern Colorado, has been suspended after finding water in the Morrison formation. U.P.R.R. JOD Ranch 1, SW SE NW 25-13s-52w, logged a small show of gas in cores in

IT'S THE FOOTAGE OF HOLE IN THE OIL SAND THAT COUNTS

NOW YOU CAN DRILL *WITHOUT* ROTATING THE PIPE

Drilling horizontal drain holes in your newly-completed well is "duck soup" for your crew. The drill pipe does not rotate. Only the cutting bit revolves. But it "plows" right into the pay sand horizontal-wise—in all desired directions, at various levels—like the roots of a tree. Then your new well becomes a multiple-well, with several holes reaching out from the vertical, draining the greatest area. Horizontal holes are drillable up to 80 feet. Increased production is a certainty, as proved by wells already drilled with this revolutionary method. Ask for full details and proof.

Full details, test records and costs upon request.
Inquiries for Franchises and Manufacturing Rights invited.

TURBINE BIT COMPANY
(Under the ownership of John A. Zublin)
2369 E. 51st St. (Phones: JE. 4433, JE. 6151) Los Angeles 11, Calif.

Zublin
HORIZONTAL WELL DRILLING

the Frontier formation at 1951 feet. The test was taken to Day Creek and bottomed at 3395 feet. Drill-stem tests of the Frontier were unsuccessful. The well may be deepened next spring.

Montana

The test of deeper formations being drilled by The Texas Company in the Bears Den field, Liberty County, has topped the Madison formation at 2899 feet and had shows of oil in cores between 3020-35 feet, but on a drill-stem test recovered only drilling mud with no oil. This field has produced a small amount of gas from upper sands, and the well will probably be carried into Devonian sands before completion.

☆ California

Arvin Section Well Deepened To Lower Chanac Is Producer

Well deepened to Lower Chanac in Arvin area flows 1200 barrels; Cymric completion good for 2500 barrels; operator fishing for drill pipe in world's deepest well; tests to be made in Kettleman Hills Middle Dome wildcat; minor discovery indicated in Los Angeles County; drilling program planned in 40-year-old field.

Kern County: Recent interest in the Arvin area of the Mountain View field was heightened with the recompletion by Apex Petroleum Corporation of Cattani 1 in 15-31s-29e flowing 1200 barrels a day of 31-gravity oil through ½-inch choke. Production is from perforated interval at 6560-6620 feet.

The well was originally drilled to 6152 feet in 1939 by The Superior Oil Company and completed flowing 1560 barrels a day through 1-inch choke. It was abandoned in April, 1942. Apex acquired the well and 160 acres and deepened 800 feet into the Lower Chanac. Production in the Arvin area is largely from sands that occur within the marine Etchegoin beds above. Apex has room for 3 more wells on its lease.

Immediately on completion of the above well Universal Consolidated Oil Company prepared to deepen Universal-Derby 1, about ¾ mile south, to the Lower Chanac.

Union Oil Company completed the best well the Cymric field has yielded in several months. Operator's Miller & Lux 1-20 in 20-29s-21e flowed 2500 barrels of 19-gravity oil from the Carneros zone on a 2-hour test.

Universal Consolidated Oil Company has a good prospective producer in Sauerdough 9, 23-29s-21e. A test of the Oceanic zone produced a good blow of clean oil and operator is now coring for a look at the Point of Rocks sand before completing.

Pacific Western Oil Corporation's National Royalties 1 in 5-26s-22e, which established a new world's depth record of 16,668 feet, is fishing for drill pipe. Contractor has cut and removed 11,550 feet of the pipe. An effort will be made to get all the drill pipe out of the hole and resume drilling, but the outlook is not bright. Circulation was lost the first of the week.

Kings County: Standard Oil Company of California is reaming its important Kettleman Hills Middle Dome wildcat, 73-30V in 30-30s-29e, and will make a formation test. Total depth is 12,317 feet in sand.

Los Angeles County: Seaboard Oil Company has apparently made a small discovery south of Newhall in 25-3n-16w. Mission Land 1 is being rigged up for a pumping test of the interval 7477-7778 feet. Location has been staked 500 feet southeast for Mission Land 2.

Shell Oil Company has staked a wildcat in the Castaic area, a locality in which wildcatters have recently shown considerable interest. Shell-U.S.L. 515-29 will be in 29-5n-17w, about 1 mile north of the Oak Canyon field. Universal Consolidated Oil Company is preparing to spud another test 1½ miles east of the Shell location.

In the East Los Angeles area, Richfield Oil Corporation has abandoned Boyle Community 33-1 after running electric log. The well attracted considerable interest because of its location in a thickly populated area. Total depth is 5902 feet.

Cleveland Oil Company has taken over part of Hogan Petroleum Company's properties in the Inglewood field and will redrill and deepen Hogan's No. 5 well.

San Luis Obispo County: Adams Oil Company is planning a 15-well program to start after the first of the year in the Edna-Arroyo field. The company is also planning the erection of a blending plant to handle road oil, asphalt and other heavy oil products. This is an old producing area, the field reportedly having been discovered about 1906. Most of the old wells are shut in or abandoned.

SPECIFY
SPANG
FOR THE BEST IN CABLE TOOLS
SPANG
HEAT-TREATED
DRILLING BITS
Fig. D360
Fig. D368
THE HIGHER STANDARD
Spang Drilling Bits are forged by a patented process which assures a sound, homogeneous product. The steel is made to specifications, which have been developed out of a long experience, to give the maximum of footage per dressing.
In the heating and forging operations, the most modern methods are used. Each step is carefully planned and executed to produce sound forgings. Heat treatment by use of modern furnaces with heat-recording instruments and experienced personnel insures the maximum of joint strength. A field dressing instruction chart is yours for the asking.
Spang Drilling Bits reflect the skill and knowledge that make every Spang Cable Tool a "Higher Standard" product.
SPANG & CO.
BUTLER, PA.
YOUR DEALER SELLS SPANG TOOLS

ARKANSAS WILDCATS

Calhoun County—Failure: Jack Carnes' Annie Burks 1, c nw sw se 25-13s-26w, Nacatoch 1580, Cotton Valley 2760, Eagle Mills 2930, abnd 12-10-46 at 3141.

Union County — Failure: Lion Chemical Corp.'s Zanel 1, c nw ne ne 34-18s-13w, 1 mi s Hillsboro, Nacatoch 2385, base Annona 2594, abnd 12-1-46 at 2718.

CALIFORNIA WILDCATS

Los Angeles County—Failure: Richfield Oil Corp.'s Boyle Community 33-1, 31-1s-12w, E. Los Angeles area, abnd 12-19-46 at 5902.

Stanislaus County—Failures: Superior's Sinclear Community 1, 5-5s-9e, Turlock area, abnd 12-17-46 at 4145.

Yolo County—Failure: General Pet. Corp.'s Gallenkamp 1, 10-6n-3e, Courtland area, abnd 12-18-46 at 4912.

COLORADO WILDCAT

Lincoln County—Failure: Santa Fe Corp.'s U.P.R.R.JOD Ranch 1, sw se nw 25-13s-52w, Arroya Anticline Frontier 1951, Morrison 2695, abnd 12-14-46 at 3395.

FLORIDA WILDCAT

Collier County—Failure: Humble's Lee Cypress 2, sec 28-47s-29e, comp 12-13-46 at 1175.

ILLINOIS WILDCATS

Clay County—Failure: Paul Doran's Hamilton 1, se se sw 32-5n-5e, abnd 2689.

Effingham County—Failures: Nat. Assoc. Pet. Co.'s Cotton 1, nw se nw 15-7n-5e, abnd 2414.

R. A. Gould's Kabbes 1, sw se nw 22-9n-6e, abnd 2427.

Fayette County—Failure: M. H. Richardson's Zinn 1, se se ne 26-7n-2e, abnd 1818.

Hamilton County—Failure: Shell's Nohava 4, se sw ne 13-6s-5e, abnd 5481.

Jefferson County—Failure: Ralph Halbert et al's Steel 1, sw sw ne 35-4s-1e, abnd 2997.

Lawrence County—Failure: G. W. Evans et al's Jones 1, ne sw nw 29-2n-13w, abnd 2831.

Washington County—Failure: C. E. Brehm et al's Bernreuter 1, ne nw se 4-1s-3w, abnd 1467.

Wayne County—Oil Discovery: Texas Co.'s Hines 1-C, se se se 1-1s-9e, flow 190 bbls fr O'Hara, 3254-60, td 3263.

Wayne County—Failures: R. B. Martin et al's French 1, sw sw se 24-1n-9e, abnd 3352.

A. J. Slagter, Jr.'s Marshall 1, nw nw se 36-2n-6e, abnd 3300.

White County—Failure: Nat. Assoc. Pet. Co.'s Artin 1, nw nw nw 32-4s-8e, abnd 3558.

INDIANA WILDCAT

Vanderburg County—Failure: A. S. Mims' Welborn 1, 18-7s-11w, abnd 2547.

KANSAS WILDCATS

Barton County—Failure: Sohio et al's Ochs 1, ne ne nw 10-16s-13w, abnd 3398.

Ellis County—Failure: Mazda Oil Co.'s Henderson 1, sw sw sw 27-11s-18w, abnd 3735.

Jefferson County—Failure: Una Oil Co.'s Griffiths 1, sw nw nw 2-10s-17e, abnd 2184.

Pratt County—Failures: Cities Service et al's Long 1, ne ne sw 2-27s-13w, abnd 4410.

Lion Oil Co.'s Verning 1, ne sw se 30-27s-14w, abnd 4785.

Sedgwick County—Failure: Beech Aircraft's Craft 1, nw ne nw 31-26s-2e, abnd 2991.

KENTUCKY WILDCAT

Henderson County—Failure: Ashland O&R Co.'s Eagle 1, 15-O-23, abnd 2785.

NORTH LOUISIANA WILDCATS

Franklin Parish—Failure: Big Chief Drlg. Co.'s Mackie Bradley et al 1, se nw 35-14n-8e, Wilcox 2420, Midway 4275, Clayton 4795, Chalk 4805, 1st Tuscaloosa 5660, Main Tuscaloosa 5690, abnd 12-12-46 at 6912.

Ouachita Parish—Failure: Calif. Co.'s Breece Lbr. Co. 1, c nw ne 3-17n-5e, abnd 12-9-46 at 3271.

Richland Parish—Failure: H. G. Lewis, Jr.-A. E. Stewart's Noble 1, nw sw 12-15n-5e, Cret 2377, Ozan 2434, Tuscaloosa 2524, Tuscaloosa Red Beds 2674, L. Cret. Paluxy 3256, 1st Glenrose 3772, 1st Anhy 4250, abnd 12-13-46 at 4262.

Winn Parish—Failure: H. L. Hunt—Nebo Oil Co.'s Goodpine F-134, 1980 fr s&el 9-13n-5w, abnd 12-8-46 at 8014.

SOUTH LOUISIANA WILDCATS

Beauregard Parish—Longville (Seale) Oil Discovery: Barnsdall's Long Bell Lbr. Co. 1, c nw¼ sw¼ ne¼ 1-6s-10w, 4 mi n Gordon fld, Cockfield pay 8228, perf 69 shots 8236-53, flow 292 bbls 49.3-gr, 9/64-in, tp 1500 lbs, comp 12-11-46 at 8430.

Beauregard Parish—Failure: Sun's Rice Ld. Lbr. Co. 2, 1900 w 2500 s nec 6-5s-11w, 4 mi no W. Pinegrove prod, abnd 12-14-46 at 7935.

MICHIGAN WILDCATS

Allegan County—Failures: Ford Henry's Myers 1, e½ se nw 1n-14w, Traverse lime 1251, abnd 12-22-46 at 1293.

Harry Stroud's Johnson 1, sw sw se 29-2n-15w, abnd 12-20-46 at 1225.

Ionia County—Failure: McClure Drlg. Co.'s Pierson 1, se se nw 13-8n-6w, abnd 12-22-46 at 3019 ft.

Wayne County—Failure: Union Drlg. Co.'s Angell 1, se ne nw 7-1s-8e, abnd 12-22-46 at 4288.

MISSISSIPPI WILDCATS

Forrest County—Failure: Morgan-Norton's U.S.A. 1, se sw 15-1s-13w, Chalk 5854, Tuscaloosa 7072, Massive 8300, abnd 12-19-46 at 9504.

Hinds County—Failure: Kingwood's W. G. Plummer 1, nwc sw sw 14-5n-1w, jkd 12-18-46 at 3200.

Jefferson County — Failure: Humble's J. Fred Gordon B-1, sec 44-9n-1w, jkd 12-10-46 at 11,379.

Lincoln County—Failure: Humble's Lincoln Cty. Bd. Supervisors 1, nec 16-8n-5e, abnd 12-17-46 at 10,818.

MISSISSIPPI OUTPOST

Adams County — La Grange Extension: Vaughey & Vaughey's R. Lee Parker 1, sec 9-6n-2w, ¼ m w prod, perf 6243-46, Wilcox flow 130 bbls 43.6-gr oil, ⅛-in, comp 12-12-46 at 6243.

OHIO WILDCAT

Morgan County—Failure: Industrial Gas Corp.'s Frank Northrup 1, ne ne 9, Malta Township, Medina 4352-62, abnd 12-13-46 at 4362.

OKLAHOMA WILDCATS

Cotton County—Failures: W. A. Clark, Jr.'s Stuckey 1, nw ne ne 15-2s-14w, abnd 2255.

H. B. Wilkerson's Dickinson 1, nw se sw 17-3s-10w, abnd 1512.

JP Rods & Liners Give Results!

Machining + Hardness

Operators responsible for getting a job done want and need tools and equipment that will stand the gaff. That's why they're recommending JP Rods and Liners — yes, they've discovered that rods and liners, machined and hardened hard, as JP's are, will cut down work stoppages and increase efficiency when "makin' hole" really counts.

Expert oil country machinists, using top-quality materials, grind and finish JP Rods and Liners to precision standards. In addition—each and every JP Rod and Liner is "hardened" by a patented process and individually inspected to approximately 600 (or better) Brinell test.

JP

CALL — WRITE — WIRE — CABLE

Made to A. P. I. standards, JP Rods and Liners are available in all stock sizes (and special sizes) to fit any slush pump. For information on sizes and prices—ask for our New Catalog or give us your specifications.

J P Machine & Tool Company

1534 S. E. 29 | P. O. BOX 4511 TEL. 3-8700 | OKLAHOMA CITY

The Oil Weekly's TRADING POST

USED EQUIPMENT FORUM

CLASSIFIED ADS . . . EQUIPMENT . . . SERVICES . . . PERSONNEL

FOR SALE

■ 5 Complete Reda Pumping Units. Cables like new. 75 and 97 H.P. Motors. Max Steinbachel, 1905 Park Place, Wichita 4, Kansas. Phone 5-6082.

■ Well drilling machines, Fort Worth, Wichita, Keystone, Star spudders, standard outfits; Sullivan drills, steel derricks, tools, cable. All equipment overhauled or rebuilt and guaranteed. S. W. Pressey, Pueblo, Colorado.

■ Lumber for sale: 5 cars 3 x 12—10′ to 16′ Hardwood $49.00. 5 cars 3 x 6 & wider Hardwood roadway lumber $43.00 to $49.00. Fir timbers 12 x 12 & larger 40′ to 120′ in length. 1 x 2 and 2 x 2 Surveyor stakes. Hardwood pallets for sale. E. J. Gaienne Lumber. Box 1074, Shreveport 89, La.

■ FOR SALE — Complete water purification unit. Brand new, capacity 80 gals. per minute. Also one water pumping unit, complete with two R-33 Continental Red Seal Engines, two 6″ centrifugal pumps, all necessary fittings. Atlas Supply Company, Box 1331, Bakersfield, California.

■ 1—24″, double 3 point Reamer for sale cheap. 1—3000 gal. Butane Tank mounted on truck trailer, located at Vernal, Utah. Large stock of used oil well supplies. Send us your inquiries. Atlas Supply Company, Box 1331, Bakersfield, California.

■ Oil Producing Wells in Petrolio, Ontario, Canada; 270 acres; Absentee Landlords offer to sell or Managership. Any reasonable offer. Write, Attorney, Schlosberg, 186 Joralemon Street, Brooklyn 2, N. Y.

"LUCITE" SHEETS & RODS
Cast Tubing & Plastic Materials for Instruments & Chemical Use
Insoluble Gaskets, Packing & Solid Valve-Ball Floats
JULIAN RHODES MUENCH CO.
Plastics
1527 W. Alabama **Tel. J. 2-1565**
Houston 6, Texas

FOR SALE
STEEL STORAGE TANKS
90-10,000 Gallon Capacity
Tank Car Tanks
Cleaned—Painted—Tested
Also, a large quantity of used 13″ and 15″ Channel Iron as removed from Tank Car Underframes
Located in Oklahoma
IRON & STEEL PRODUCTS, INC.
41 years' experience
13484-A S. Brainard Ave., Chicago 33, Illinois
Phone: BAYport 3456
702 Ritz Building, Tulsa 3, Oklahoma
Phone: Tulsa 2-9238
"ANYTHING containing IRON or STEEL"

SITUATION WANTED

■ Wanted: Mechanical Engineer thoroughly familiar with Design and Manufacture of Rotary Oil Well Drilling Tools desires position with an enterprising Company along allied lines or as Sales Representative or Sales Engineer. Willing to travel. Address Box No. 113, c/o The Oil Weekly, Houston, Texas.

■ Graduate Petroleum Engineer with 12 years experience with Majors in drilling and production departments desires connection with Independent. Experience acquired in six states with flush and stripper production and secondary recovery projects. Box 113, The Oil Weekly, Houston, Texas.

HELP WANTED

■ Land man for company operating throughout Midcontinent. Must be well rounded and should have wide acquaintance and knowledge of Gulf Coast areas although not absolutely necessary. Replies will be confidential. Box 106, The Oil Weekly, Houston, Texas.

■ GRAVITY PARTY CHIEFS AND OPERATORS with experience for domestic work in new fast-growing concern. College degree desired but optional dependent on experience. Exploration Surveys, Inc., 1914 North Harwood St., Dallas 1, Texas.

SERVICES

■ Oil Industry Employment Service, P. O. Box 2603, Tulsa, Oklahoma. For technical and trained personnel. Licensed. Bonded. Confidential. No charge to employees.

ADVERTISING RATES

Trading Post Section

Regular classified advertisements for this special section, set in type this size without border, take flat-rate of 7 cents per word for the first insertion and 5 cents per word for each subsequent insertion of same copy. Display advertisements for this section, set in suitably larger type with ruled border, are $5.00 per inch for the first insertion and $4.00 per inch for subsequent insertions. Remittance must accompany copy which should be sent to:

Trading Post Section, The Oil Weekly
P. O. Box 2608 **Houston 1, Texas**

LEASE FORMS

for

Alabama-Mississippi and Florida-Georgia

Available for Immediate Shipment from Stock

Form 311-A.M.—Designed for use in Alabama and Mississippi

Form 311-F.G.—Designed for Use in Florida and Georgia.

Order by Form Number

Both of these forms were prepared by leading oil attorneys and lease men and are in use by both majors and independents.

Write, Wire or Call Your Order

to

STOCK FORM DEPARTMENT

THE GULF PUBLISHING CO.
P. O. Box 2608 **Houston 1, Texas**
Telephone Hadley 3141

Bridwell O&G Co.'s Grim 1, ne sw nw 32-3s-10w, abnd 1702.

J. H. Fisher's Pope 1, sw nw sw 19-3s-12w, abnd 1807.

R. S. Hays' Fowlie 1, se se ne 32-3s-14w, abnd 2500.

W. H. Rogers et al's School Land 1, se nw nw 36-4s-10w, abnd 1750.

Akin & Dimock's Landers 1, se ne se 32-4s-13w, abnd 2120.

Bridwell O&G Co.'s Odle-pah-quote-te 1, sw nw ne 12-5s-13w, abnd 2520.

Garvin County—Failures: W. A. Garrison's Billman 2, se nw nw 16-2n-3e, abnd 1352.

W. A. Garrison's Billman 1-A, ne nw nw 16-2n-3e, abnd 1352.

Pruitt & Abrams' Cazad 1, nw ne se 16-2n-3e, abnd 1506.

Hughes County—Failure: Yancey & Harris' Adams 1, nw nw nw 22-8n-9e, abnd 3025.

Okfuskee County—Failure: Bryan Pet. Co.'s Tuffer 1, sw sw ne 10-13n-7e, abnd 3620.

Oklahoma County—Failure: A. R. Jordon's Barnett 1, sw sw sw 13-14n-1w, abnd 5976.

Tillman County—Failure: Whitaker & Britton's Gittings 1, nw nw nw 15-4s-14w, abnd 2010.

WEST TEXAS WILDCATS

Andrews County—Oil Discovery: Humble's Sims 2, c ne ne PSL 25, blk A-39, 3⅛ mi nw of Nelson 1-well pool and on same producing contour, elev 3376, Wichita Albany 7090, Devonian 7890, Fusselman 9280, Montoya 9440, Simpson 9690, Ellenburger lime 10,400, dolomite 10,458, flowed 704 bbls 42-gr, gor 363/1, ¼-in, 2000 gals acid Ellenburger dolomite perf 10,466-10,531, comp 12-17-46 at 10,535.

Crockett County—Failure: T. W. Loffland-J. M. Loffland, Jr.'s V. B. Cox 1, c nw sw sec 40, blk ST, E. Foster-T.C. Ry. sur, elev 2507, Simpson 9625, Ellenburger 10,265, abnd 12-11-46 at 10,939.

WEST TEXAS DEEP PAY TEST

Winkler County — Hendrick Deep Failure: Stanolind - Westbrook - Thompson Holding Corp.'s Hendrick 35-A-T-88-M, 710 nsl 1980 wel PSL 33, blk 26, elev 2864, anhydrite 1200, Yates 2520, Permian - Pennsylvanian contact 8280, Woodford 10,380, Devonian 11,010, Silurian 11,140, Montoya 11,770, Simpson 12,130, Waddell 12,910, Joins 13,325, Ellenburger 13,385, abnd 12-14-46 at 13,815.

WEST CENTRAL TEXAS WILDCATS

Erath County—Failures: J. E. Cheek et al's Lucy Russell 1, 2316 nsl 990 ewl A. Ewing sur, sbdn 6, abnd 12-15-46 at 2030.

S. C. Hoel et al's Lackey 1, 1650 fr se&swl of (easterly) John Reed sur, abnd 12-18-46 at 4470.

Jones County—Failure: George Waite et al's Hardwick 1, 330 out sec lot 2, Louisa Mathews sur 7, elev 1563, Saddle Creek 1670-90, Bluff Creek 1698, Coal 1750-68, abnd 12-17-46 at 2180.

Shackelford County — Failure: Stanolind's Davis 1, c se ne T&P Ry. 48, blk 14, elev 1758, Dothan 1250, Saddle Creek 1550, Canyon 2580, Palo Pinto 3100, Capps 3370, Bend 4417-4690, Mississippi 4757, Ellenburger 4845, abnd 12-16-46 at 5202.

Taylor County—Failure: Tal Vez Oil Co.'s Collins 1, 1700 nsl 2900 wel sect 8, Alexander Thompson sur 20, elev 1670, abnd 12-16-46 at 2025.

NORTH TEXAS WILDCATS

Archer County—Failures: B.O.M. Co.'s Conner 1, 200 nsl 1669 wel blk 105, J. W. Harris subdn, abnd 12-2-46 at 1477.

Frank Wood et al's Abercrombie 1-B, 1500 snl 200 ewl blk 158, J. W. Harris sbdn, abnd 9-12-46 at 1330.

Cooke County—Failure: Hollandsworth Drlg. Co.'s Zimmerer 1, 330 out nwc of 434.44-ac, 5300 snl 3000 ewl of M. Langham sur, elev 948, Ellenburger 1974, abnd 11-30-46 at 2024.

Wilbarger County — Failure: Trout-Hansen Prod. Co.'s Streit 1, 2970 snl 330 wel H&TC Ry. 7, blk 9, abnd 12-16-46 at 3505.

NORTH TEXAS OUTPOST

Montague County—Bowers Extension: Eason Oil Co.'s Yarbrough 1, 2150 fr m/n/nl 1500 fr m/w/el of F. J. Bellows sur, 1 mi s prod, elev 1173, pump and flow 328 bbls 40-gr oil, 2% wtr, Strawn 4054-4101, comp 12-14-46 at 4118.

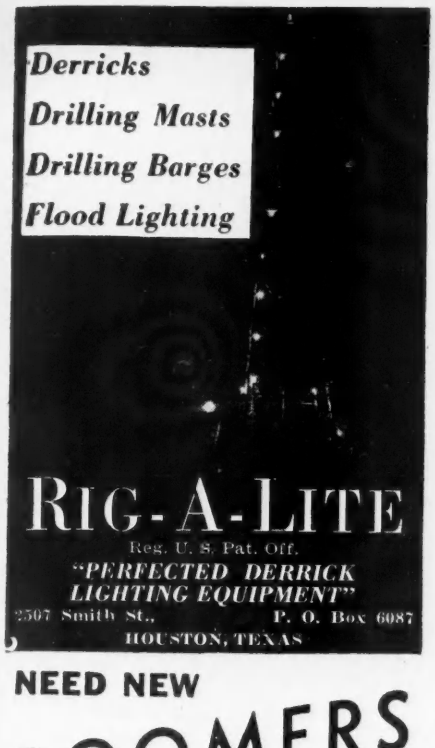
EAST TEXAS WILDCATS

Navarro County—Failure: J. A. Johnson-J. D. Nantz's Earl McDaniel 1, 3819 fr nwl 4150 fr nel Iredell Redding sur, Austin chalk 1950, abnd 12-13-46 at 1965.

Robertson County—Failure: H. H. Coffield et al's Briggs 1, 330 ft fr sw&sel of 191-ac tr, 1250 fr sel 13,900 fr nel of C. Charle sur, T. J. Chambers Lge, elev 348, abnd 12-13-46 at 2250.

Smith County—Oil Discovery: Delta Dr. Co.'s Boynton-Magnolia 1, 467 snl 667 wel 48.74-ac tr, 80 ewl 467 snl J. J. Smith sur, 2 mi e by n of Mount Sylvan fld, elev 528, Pecan chalk 3280-3475, Austin chalk 4598-4838, Woodbine 5225, Georgetown 6108, Mainstreet 6455, Fort Worth 6855, Kiamichi 7285, Goodland 7370-7422, Paluxy series 7469, oil pay 7516-27, water 7611, flow 283 bbls 33.3-gr, gor 158/1, natural via ¼-in, fr perf 7512-28, comp 12-17-46 at 7727.

Wood County—Failure: Haynes B. Ownby, Tr.'s Harry-Sun 1, 330 snl 480 fr m/w/wl of Jonathan Swift sur, elev 395, Nacatoch 1900, Pecan chalk 2777-3090, Austin 4565-4696, Sub-Clarksville 4779, Woodbine 5290, abnd 12-19-46 at 5510.



RIG-A-LITE
Reg. U. S. Pat. Off.
"PERFECTED DERRICK LIGHTING EQUIPMENT"
2507 Smith St., P. O. Box 6087
HOUSTON, TEXAS

NEED NEW
BOOMERS
for your
OIL FIELD HAULING?
You can get them now! Norton Type "B" and Type "J" drop forged, heat treated steel Load Binders (Boomers) are ready for immediate delivery. Order them through your jobber.

NORTON
EQUIPMENT CO., Inc.
Box 1185
Houston 1, Texas
TYPE "B" — Over 30,000 pounds test — for chain sizes up to 5/8 inch.
Guaranteed against failure under normal usage.

QUICK DELIVERIES ON
STEAM CONDENSERS
and
FEED WATER HEATERS
We deliver small condensers and feed water heaters built to your specifications in days instead of weeks or months.
Call us also for expert maintenance of your condensers and feed water heaters—QUICK SERVICE.
25 Years Successful Experience
GULF ENGINEERING CO., INC.
"Service, Not Promises"
1682 INGEBORG ST. HOUSTON, TEXAS
916 S. PETERS STREET NEW ORLEANS, LA.

SOUTH CENTRAL TEXAS WILDCATS

Medina County—Failures: C. G. Bigby's Mrs. L. S. Bader 1, 330 fr nl 2310 fr el 40-ac lse, Medina CSL sect 295, abnd 11-1-46 at 1050.

Conway Dev. Co.'s Mary Wynne 1, 620 fr sl 720 fr wl 80-ac lse, and of J. Campbell sur 24, 3 mi ne Ina fld, abnd 10-5-46 at 210.

Rio Seco Oil Co.'s Jas. Amberson 1, 1650 fr n&wl 288.5-ac lse and G. Van Norman sur 436, Georgetown 689, abnd 12-1-46 at 800.

Bexar County—Failure: J. A. Caldwell's Maude Cousins 1, 2100 fr nl 660 fr wl J. H. Lucas sur 54, abnd 4-10-46 at 530.

SOUTHWEST TEXAS WILDCATS

Duval County—Failures: Edwin B. Cox-Jake L. Hamon's D. C. Chapa 1, 330 fr sl 2639 fr el AB&M sur 500, on 741.59-ac lse, 3½ mi se Hoffman fld, abnd 12-12-46 at 2452.

Sharples Corp.'s Camillo Palacios 1, 990 n alg el sec S.G. de Garcia 60-ac lse, th 1300 e at ra for 5100 fr wl 4700 fr sl San Andres Gr, 2-1/3 mi se E. Longhorn fld, abnd 12-4-46 at 6450.

McMullen County—Failure: Brian Jones' E. R. Hagist et al 1, 2056 fr sl 2685 fr ely el 692-ac lse and BS&F sur 121, 1½ mi sw San Jose fld, Cole 1247, Mirando 1972, Pettus 2152, abnd 12-8-46 at 2210.

Starr County—Oil Discovery: Daubert-Achning's M. Villareal 1, 330 fr s&wl n 203-ac of blk 5, Santa Cruz Gr, 5000 fr wl 1700 fr nl of gr, 6600 se Kelsey fld, pay 5954, perf 36 shots 5961½-67, flow 152 bbls 41-gr, ¼-in, gor 385/1, tp 900 lbs, 1220 lbs, comp 12-2-46 at 5988.

Webb County—Failure: Texas Co.'s A. E. Gates 1, 2310 fr wl 2318½ fr nl CCSD&RGNG sur 63, 1920-ac lse, 8 mi nw Lopez fld, abnd 12-10-46 at 2520.

Zapata County—Failures: Thad O. Day's Joe Dodier 1, 30 fr nw&swl blk 10, Thad O. Day sbdn 2588-ac lse out of sh 4&5, El Socarro Gr, 4 mi w Comitas fld, abnd 12-12-46 at 2508.

Sawnie Robertson's Serapio Vela Heirs 1, 2820 fr nel 1980 fr sel Rafael Vela porc 26, 660 ne swl 320.83-ac lse, abnd 12-5-46 at 2404.

LOWER TEXAS COAST WILDCATS

Bee County — Failure: Southern Minerals Corp.'s B. F. Beasly 1, 2600 fr nwl 2300 fr nel 1004-ac lse, 6060 fr ne 9200 fr nwl Wm. Allen sur, 1 mi nw Tynan, Beasly area, abnd 12-7-46 at 4950.

Karnes County—Failure: Magnolia's Dallas Kusky 1, 330 fr nwl 330 fr swl 360-ac lse, Thos. J. Devine sbdn Carlos Martinez 15-Lge Gr, Green fld area, abnd 12-14-46 at 7610.

Live Oak County—Oil Discovery: Henshaw Bros.-E. H. Smith's H. N. Schwartz et al 1, 330 fr se&swl 200-ac lse, John McMullen sur, 2 mi ne Lucas gas fld, pay 4011, perf 12 shots 4016-19, flow 46.4 bbls 23.5-gr, ⅛-in, gor 841/1, comp 11-10-46 at 4495.

Nueces County—Failure: Renwar Oil Corp.'s Frank Cech 1, (OWDD) 467 fr s&wl 320-ac lse and sect 32, Laureles farm trs, 10 mi s Corpus Christi, abnd 12-12-46, otd 6606, td 10,765.

Refugio County—Failure: Sharples Corp.'s Mrs. Audrey Baumgartner 1, 330 fr nl 2970 fr wl 1732-69-ac lse, 2970 fr wl 6790 fr sl de la Garza and Jose Vidauri sur, 2¼ mi n ne Greta fld, 1¼ mi n Vidauri, abnd 12-10-26 at 6525.

Willacy County—Failure: Magnolia - J. S. Abercrombie Co.'s Yturria Cattle Co. 1, 2571 s alg el Las Mestenas Gr, fr nec sect 47 Reynolds sbnd of gr, th 2900 e at ra to lcn on 4534.78-ac lse, 6½ mi w nw Raymondville, abnd 12-14-46 at 10,298.

UPPER TEXAS COAST WILDCATS

Jefferson County—Failure: Sun's Wm. Seale 1, 330 fr w&nel 34.93-ac tr, Absalon Williams Lge, 1½ mi ne W. Beaumont fld, abnd 12-16-46 at 7900.

Montgomery County—Failure: Superior Oil Co.'s Harry Brown 1, 690 fr el 330 fr sl 52.25-ac lse, Wm. Hillhouse sur, Magnolia disc area, Wilcox 8110, abnd 12-10-46 at 11,347.

San Jacinto County—Failure: Roxie Wright et al's H. L. Combs-Foster Lbr. Co. 1, 660 fr s&el 40-ac lse, 4000 due s Manning's Mercy extension well, Samuel Lust sur, abnd 12-8-46 at 8505.

Wharton County—Gas Discovery: Floyd L. Karsten's J. L. Reitz 1, 467 fr s&wl 80-ac lse, 1 mi nw S. El Campo fld, 1¾ mi ne Daboval fld, sand 6936-52, perf 36 shots 6936-42, flow 3,579,000 gas, ¼-in, tp 2690 lbs, comp 12-3-46 at 7200.

UPPER TEXAS COAST NEW PAY TEST

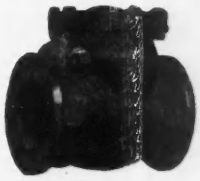
Orange County—Orange Gas-Distillate Discovery: W. V. Bowles' M. Granger Heirs et al 1, 125 fr nl 75 fr el 50-ac lse, Wm. Dyson sur, pay 4725, perf 24 shots 4725-35, flow 6 bbls 60-gr dist, 1 mln gas, ⅛-in, tp 1600 lbs, cp 1700 lbs, comp 12-6-46 at 5317.

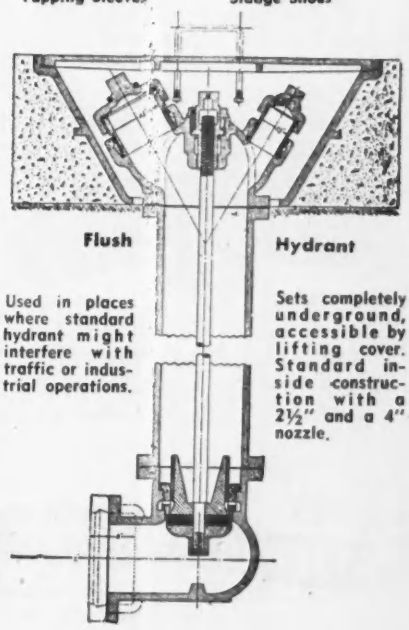
WYOMING NEW PAY TEST

Park County—Elk Basin Madison Discovery: Stanolind's M-38, ne se ne 24-58n-100w, Tensleep 3938, Madison 4350, El 4503, acid 2000 gals, flow 10 bbls per hr, comp 12-11-46 at 5013.

Louisiana Leases Offered

Sealed bids will be received on or before January 14 for the lease of approximately 18,446 acres of state-owned land, mostly stream beds and water bottoms, according to the State Minerals Board.

"Red Wheel"
VALVES, HYDRANTS
Write for Catalog No. 34

CHECK VALVE

GATE VALVE
M & H valves are used in the oil industry for water, gas, steam, oil, chemicals and are furnished in all commercial sizes from 2" to 30", inclusive. They are cast iron body, bronze mounted, furnished double disc parallel seat or solid wedge. They are heavily proportioned and have a high factor of safety.
OTHER M & H PRODUCTS
Fire Hydrants
Gate Valves
Tapping Valves
Special Castings
Tapping Sleeves
Check Valves
Floor Stands
Extension Stems
Mud Valves
Flap Valves
Sludge Shoes

Flush Hydrant
Used in places where standard hydrant might interfere with traffic or industrial operations.
Sets completely underground, accessible by lifting cover. Standard inside construction with a 2½" and a 4" nozzle.
M&H VALVE
AND FITTINGS COMPANY
ANNISTON, ALABAMA

"Best Bet Yet"

Here's a compact Sucker Rod Wiper designed as Well Pullers wanted it. Short overall height, 4", just right height for wrenching rods. Weight complete, only 29#. Easy to handle, comes mounted on pony rod ready to be used. Tough, natural rubber wiping webs squeegee rod, box and square free of oil. No oil leaves hole or flips on crew... Rubbers stand enough pressure to take oil to tank or sump if well flows. Wipes any size rod, ⅝" to 1¼".

Duo-Wipe style, code: SUB-ZONE, shown above, has two wiping elements. Quadra-Wipe Style, code: SUBSOLAR, has four rubbers for use with extra-low gravity oil. Both styles make up on standard tubing sizes at the well head.

Cut-away drawing shows sturdy construction. Handy Table Plate Head, available for both models, holds rod tools and elevators.

Write for Catolog No. 310

Specify
PATTERSON-BALLAGH
A DIVISION OF BYRON JACKSON CO.
"Best Bet Yet"

SUCKER ROD WIPERS

1900 E. 65th Street, Los Angeles 1
6247 Navigation Boulevard, Houston 11
808 Graybar Building, New York 17
931 Russ Bldg., San Francisco 4

SQUEAKS from the BULL WHEEL

This Curious World

Sailors who get the best results have a little port in every sweetheart.

Then there was the hillbilly who put a silencer on his shotgun because his daughter wanted a quiet wedding.

There isn't much to see in a small town, but what you hear makes up for it.

What the average woman craves is a man of steel lined with gold and who can be wrapped around her little finger.

Termite's nightmare: "I dreamt I dwelt in marble halls."

A bathing beauty is a girl worth wading for.

Most girls don't mind if a man loves her and leaves her—provided he leaves her enough.

Time is the stuff between pay days.

Marriage is an institution which teaches a man thrift, regularity, and other virtues he wouldn't need if he stayed single.

Alimony is the high cost of leaving.

Then there was the absent-minded office manager who pulled the typewriter down on his lap and unfastened the ribbon.

Some girls' hair looks like a mop, but that don't worry them—they don't know what a mop looks like.

Why is it a girl will scream at sight of a mouse but grin at a wolf?

Flower of Wisdom

The school teacher sent a note to Willie's mother to say that he was positively dirty.

Willie's mother sent back a reply, which said:

Dere teacher, I knows as Willie's no rose, but I sent him to be teached, not smelled.

Tried and True Pattern

"And if I refuse, will you commit suicide?"

"That is my usual custom."

Drawing the Line

"What's this whopping big item on your expense account?"

"My hotel bill."

"Well, you quit buying hotels."

The Woman's Way

"Don't you love a beautiful night like this?"

"Yeah, but I usually wait 'till we're a little farther from town."

Life Is Like This

"I know he's rich, but isn't he too old to be considered eligible?"

"Nonsense, Daughter. He's too eligible to be considered old."

Wooden He Like to Know

"Where you going with the saw?"

"To fix my wife's drawers."

"Are they wooden?"

Wasted Hours

"I never drink cocktails."

"Goodness sake! What do you do between 5 and 7 p.m.?"

Oh, Promise Me

"Now, remember," shouted the district attorney at the defendant on the witness stand, "everything you say will be held against you."

"Betty Grable, Betty Grable, Betty Grable!"

Something to Remember

"Madam," said the man on the crowded bus, "you're standing on my foot."

"Then why don't you put your foot where it belongs, stupid?"

"Don't tempt me, Madam."

Pardonable Error

A priest walked up to a young man hanging on to a lamp post.

"Shame on you! What have you been drinking?"

"Three Fathers, Feather."

The Broader View

"Say, don't marry that girl! She's been out with everybody in town!"

"Yeah, but it's such a little town."

Poet's Nook

Breathes there a man so much abnormal
That he can't be moved by a low-cut formal?

OWEN

Type "A" Work Benches
Finest in the Field!

Owen Type "A" Work Benches are all-steel, all-welded and mounted on rigid steel skids. Drawers are roller-mounted, with forward stops and a central locking mechanism. Guards prevent water and oil from draining in on tools. Sturdy stand provides convenient space for mounting vise. Six drawers for hand tools and instruments, a big bin for rags and steel pegs on the back apron for wrenches provide plenty of storage space.

They're the finest in the field for saving tools and providing a safe, convenient working space. Put one on each rig you operate . . . they'll "dress up" its efficiency and appearance.

SOLD THROUGH ALL SUPPLY STORES
Distributed in California by Howard Supply Company, Los Angeles, Calif.

OWEN TOOL COMPANY
ROUTE 9 BOX 800-B V-2-4341
HOUSTON, TEXAS

O. M. (Ted) Evans, general field superintendent of Pacific Western Oil Corporation, Los Angeles, has been promoted to vice president of the company. Evans entered the oil industry in West Virginia and was associated with Skelly Oil Company for about 22 years in the Mid-Continent area until 1942, when he joined the present company. In his new position he will be in charge of production and drilling operations in California and the Rocky Mountain area.

O. M. Evans

»

F. E. Swanson was appointed assistant to **Wesley G. Gish,** vice president in charge of land and exploration for Deep Rock Oil Corporation. Swanson was connected with Transwestern Oil Company at the time it was merged with Sunray, and was employed by Mid-Continent Petroleum Corporation before that. **L. E. Stegall** was put in charge of a new Shreveport office, with **W. Earl Shamblin** in charge of exploration. **F. E. Melott** will be manager of the office being reopened at Wichita Falls, Texas. **Bill Grant,** scout, is being transferred there from Shreveport.

»

J. C. Kahl, Northwest division scout for The Carter Oil Company, Billings, Mont., has been named chief scout for the company with headquarters in Tulsa. He replaces **John O. Campbell, Jr.,** who has been made assistant to the manager of the Northwest division. **Harry C. Chapman,** Carter attorney at Billings, will become assistant manager of the Northwest division, and **A. L. Deaton** of the legal department in Tulsa has been transferred to the legal staff at Billings.

»

W. C. Chonette, Alberta manager for Shell Oil Company of Canada, Ltd., has been transferred to Los Angeles and is succeeded at Alberta by **M. W. Sheppard, Jr.** Chonette joined Shell in 1928, and went to Calgary, Alberta, three years ago. Sheppard went to Calgary from California.

»

Joseph D. Peeler, a resident of Los Angeles and member of a law firm in Los Angeles and another in Washington, D. C., has been elected a director of Tide Water Associated Oil Company.

»

Stanley C. Hope has been elected president of Stanco Incorporated of Linden, N. J. He is also president of Gilbert & Barker Manufacturing Company, Springfield, Mass., both companies being affiliates of Standard Oil Company (N. J.). Hope succeeds **F. W. Moss,** who will continue in an advisory capacity on Stanco's foreign marketing activities.

Henry H. Mack, vice president of Sunray Oil Corporation, will move to Los Angeles to take charge of the company's producing, exploration and land activities in California. Sunray has established a California division to be in operation shortly after Jenuary 1. Its refining operations, devoted principally to manufacture of asphalt and road oils, will continue under the direction of **F. L. Martin,** vice president, in Tulsa. Mack joined Sunray in 1927 as geologist and engineer, after working three years for Munn Brothers. He was made a vice president in 1940 and last August was given a special administrative post as assistant to the president.

»

Joe L. Quinn, Tyler, Texas, independent operator and formerly Fort Worth division chief scout for The Pure Oil Company, has been appointed East Texas district landman for Roeser & Pendleton, Inc., with headquarters at Tyler.

»

P. L. Minshall, Tulsa, has joined Sunray Oil Corporation as a materials clerk. He formerly was a production clerk with W. C. Norris Manufacturer, Inc. A native Tulsan, Minshall formerly worked six years as purchasing agent for E. H. Moore, and two years as assistant manager of outside production for Engineering Laboratories, Inc.

Ivan G. Burrell, superintendent of production in the Bridgeport, Ill., district for The Ohio Oil Company, will become division superintendent for the company's Marshall Division on January 1, taking over the post formerly held by **A. J. Rosenlieb,** who succeeded the late **C. C. Carroll** as division manager at Marshall. The division includes the company's producing operations in Illinois and Indiana. Burrell has been with the company since 1931, following his graduation from Colorado School of Mines.

Ivan G. Burrell

»

J. R. Teague, production superintendent for the Texas Pacific Coal & Oil Company, Fort Worth, has been transferred to Natchez to supervise the company's wildcat operations in Mississippi.

»

Glenn A. Campbell, formerly with PAW in Washington, D. C., and the Glenn Drilling Company in Tulsa, has become associated with Spartan Drilling Company as manager of drilling operations. His headquarters will soon be established in Shreveport, Louisiana.

INDUSTRIAL SUPPLY CO.
ISC

YOU ARE OUR FAVORITE PEOPLE!

You . . . our customers . . . are the only reason we are in business. And you can bet that we will do everything in our power to please you. Friendly and personal service is the basis of the INDUSTRIAL Supply Company. For everything from the largest Rotary Power Rig down to the smallest Production Valve in nationally known items, see us first! Try INDUSTRIAL service once . . . we think you will like it!

MAIN OFFICES
500 Eighth St., Wichita Falls, Texas

STORES: • Wichita Falls • Electra • Kamay • Turnertown • Freer
BRANCH OFFICES: • Dallas • Tulsa • Houston • Shreveport • San Antonio Oklahoma City

AT YOUR SERVICE AT ALL TIMES

Jerald Alliger, recently with the U. S. Geological Survey in Denver, has joined Geophoto Services, Inc., as a photogeologist. During the war he was a captain in the Army Air Corps, serving with the Photo-mapping and Combat Intelligence units.

»

George J. Helis has been appointed manager of West Texas and New Mexico operations of the American Trading & Production Corporation, succeeding **John M. Scrogin,** resigned. District headquarters are at Midland, Texas.

Harold Jarvis, sales engineer of Tulsa, will move into the Illinois Basin early in January to represent Hale Supply Company and Richmond Chemical Company, both of Tulsa, and Dragon Manufacturing Company, Marietta, Ohio.

»

William J. Austin, Hercules Powder Company's director of purchases since 1942, will retire December 31. **Andrew VanBeek,** an assistant director of purchases, will succeed him as director of the department.

J. E. Barthmaier has been appointed sales engineer of The Superior Engine Division of The National Supply Company, with headquarters in Boston. He has been with Superior since 1936, except for Army service during the last three years, at which time he was chief of the High Speed Marine Engine School, and organized the Marine Electrician School.

J. E. Barthmaier

»

D. W. Woods, secretary of General Petroleum Corporation, who recently was made general counsel, has been elected to the board of directors. **J. M. Jessen,** who has been assistant secretary, was named to fill the post of secretary vacated by Woods.

»

N. A. Binz, F. W. Michaux and **Lewis N. White,** all of Houston, have incorporated the Los Hermanos Oil Corporation to operate in Texas.

»

John W. McKnab, recently appointed Rocky Mountain representative for Cardwell Manufacturing Company, has established headquarters in Casper, Wyo. His territory includes Wyoming, Montana and Colorado.

Only *Two* things can stop a **JENSEN**

As long as there's oil, a Jensen will pump it—dependably and economically. That's one way to stop a Jensen—no oil.

The other way is the laws regulating pumping time.

Your Jensen dealer can't show you any way to get around these "stoppers." He can show you—with proof—how to pump oil cheaper when it's there and the law says you can pump it. His proof is backed by 27 years of building pumping equipment.

See him at your convenience.

JENSEN BROTHERS MANUFACTURING CO.

. . . Coffeyville, Kansas, U.S.A. . . .

EXPORT OFFICE: 50 CHURCH STREET, NEW YORK CITY

Deaths

Paul Kelting, 48, Mid-Continent sales manager for Thermoid Rubber Company, died in Houston December 20. He was a native of Havana, Cuba, and went to Houston 25 years ago to engage in the oil field supply business. He was factory representative for E. M. Smith Company before becoming connected with Thermoid.

Paul Kelting

»

S. E. (Gene) Elder, 52, sales representative for C. W. Cotton Supply Company, Tulsa, died of a heart attack in Tulsa December 17. Elder formerly was with Pittsburgh Steel Company.

»

Hodge M. Falkenhagen, 44, Houston geologist, was fatally injured in an automobile accident December 23 in Houston. He was associated with Independent Exploration Company.

Demand for Spherical Roller Bearings High, SKF Reports

Spherical roller bearings, widely used in the oil industry, are playing an important part in new anti-friction bearing production records which almost triple those of 1939, according to S. F. Wollmar, executive vice president of SKF Industries, Inc., ball and roller bearing firm, reported recently. Wollmar attributes the all-time production high largely to heavy demands for this special type of bearing.

Manufacturing schedules are now being projected 18 months into the future, and the company is preparing for sustained demands consistently above the prewar levels, he said, as a result of bearing performance records achieved in most types of war equipment.

Branch Office in Tulsa Opened By Brown Instrument Division

The Brown Instrument division of Minneapolis-Honeywell Regulator Company has opened a branch office at 117 West Eighth Street, Tulsa, in charge of R. P. Walker, branch manager.

The new location, within a few blocks of Tulsa downtown oil company offices, includes storage space for instrument accessories, supplies and emergency repair stock.

James W. Brown

John C. Campbell

Two Executives Are Appointed By Detroit Diesel Division

Detroit Diesel Engine Division of General Motors Corporation appointed **John C. Campbell** manager of industrial engine sales and **James W. Brown** advertising manager. Campbell worked for Wright Austin Company and General Motors Frigidaire Division before joining Detroit Diesel in 1942. Brown has been connected with advertising and publication since 1927, and for the past year has been *Products News* manager. He will continue to be in charge of *Product News*.

Goodrich Office Opened

The crude rubber purchasing offices of The B. F. Goodrich Company is again being opened in Singapore, Straits Settlement, Malaya, with George M. Naylor as managing director, it is announced by E. A. Stevens, manager of crude rubber purchasing. The office had been closed when the Japanese overran the Malay Peninsula.

General Electric Employes Win Awards for Wartime Services

Ninety-five employes of The General Electric Company were awarded Charles A. Coffin awards for work of outstanding merit during the war years 1942-45. The awards carry a certificate and a cash honorarium, and went to employes engaged in all types of work, most of which was of so highly secret a nature that these were the first presentations of the awards since 1941. Highest number of awards, 68, went to employes of the Apparatus Department, largest of General Electric's six operating departments.

Apologies to National Supply

A story in the December 9 issue of THE OIL WEEKLY on the opening of a National Supply Company store erroneously carried the name of another firm in the headline, for which we apologize.

With the opening of National's store in Rock Springs, Wyo., the company now has 99 stores in the oil fields of the U. S. and Canada.

THOMPSON-HAYWARD
FORMALDEHYDE
for corrosion control

You can protect your casings, rods, and all exposed metal parts for only a few cents a day. You can

- SAVE ON PULLING COSTS
- SAVE ON NEW STEEL
- SAVE ON SHUTDOWN TIME

Thompson-Hayward Formaldehyde gives dependable protection from hydrogen sulphide corrosion and corrosive mine and well waters.

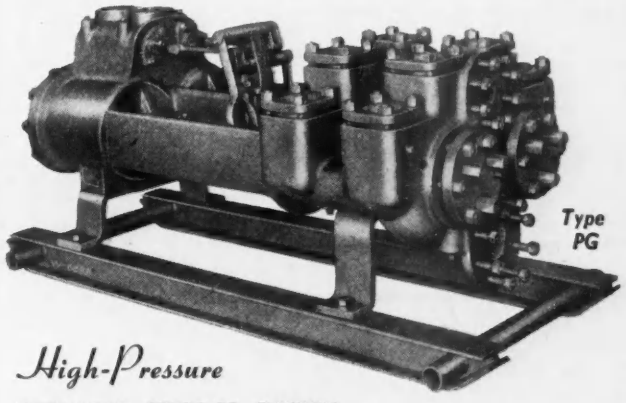
Write our nearest office for detailed information

THOMPSON-HAYWARD CHEMICAL CO.

Dallas Houston Denver
Wichita Tulsa San Antonio
New Orleans

(B)

LOCKETT-WORTHINGTON



High-Pressure
DUPLEX STEAM PUMP

Dependable performance is typical of both Worthington Pumps and Lockett Dealer Service to companies producing and handling oil. Worthington Pumps and *genuine* Worthington Repair Parts are available — through Lockett Dealers — from Warehouses maintained in the principal oil fields of Texas and Louisiana, backed up by a large replenishing stock at our Houston and New Orleans Warehouses.

Whatever your pumping problem may be — whether you require a pump or a complete pump unit for a specific type of work—you are assurred of getting prompt, dependable service through a Lockett Dealer.

A. M. LOCKETT & COMPANY, LTD.
NEW ORLEANS HOUSTON DALLAS

Standco
NO-SMOKE
STANDCO BRAKE LINING
for the easiest brake known. It "feeds off" evenly. Standco never scores brake rims. See page 2808 Composite Catalog.
Standco Brake Lining Co.
HOUSTON

HOUSTON LABORATORIES
Analytical and Consulting Chemist
Podbielniak Gas Analysis
Oil Field Brines, Waters and Cores
complete Evaluation of Crude Oils
Long Distance 267 Box 132, Houston, Tex.

Oil Field Equipment
Design and Development
Patent Drawings
J. H. HOWARD & COMPANY
ENGINEERS
1009 SCANLAN BLDG. HOUSTON 2, TEXAS

ASME API ASTM AWS AISC
"Sound Welds Through Tests and Inspection"
THE WELD INSPECTION LABORATORY
Telephone Hadley 3589
3607 Fannin Street Houston 4, Texas

THE FORT WORTH LABORATORIES
Analysis of oil field brines, cores, gas, oil and minerals. Field gas testing. R. H. Fash, Vice President; Long Distance 138. 823½ Monroe Street, Fort Worth, Texas

William M. Barret, Inc.
Consulting Geophysicists
Specializing In Magnetic Surveys
Contracts accepted for domestic and foreign projects, using the most improved instrumental and interpretative technique.
GIDDENS-LANE BUILDING
SHREVEPORT, LOUISIANA

BE SURE TO CHECK THE
TRADING POST SECTION
ON PAGE 82 OF THIS ISSUE

Stanolind Official Discusses West Edmond Unitization

More than 175 lease and royalty owners who hold interests in the West Edmond field of Oklahoma attended an open forum to learn more about the proposed unitization and gas injection program of the field.

R. E. Nelson, Jr., superintendent of unitization for Stanolind Oil & Gas Company, Tulsa, was chairman and answered various questions brought up by members of the group.

Nelson termed the meeting "definitely favorable" and said that royalty owners' support, as well as the support of the 32 operating companies in the field, will continue to be solicited.

Although there were some who questioned the merits of the project, Nelson said that as a whole, the group definitely was interested in the unitization plan.

He outlined two possible methods of conserving the reservoir energy of the four-county field: (1) the selective production of wells, and (2) the pressure maintenance by return of gas to the reservoir.

Texas Properties Sold

The Pan American Production Company has purchased for cash from S. W. Sibley his ten-acre W. E. Wylie lease in the East Texas field, Juan Ximenes Survey, Rusk County, on which are located five producing wells, E. R. Turner, vice president of Pan American, has announced. The purchase was effective December 16, and the consideration paid was on a basis of 60,000 per full seven-eighths working interest.

IOGA Chairmen

Members of the standing committees of the Illinois Oil & Gas Association have been announced by Will I. Lewis, president. Chairmen are Merle Becker, St. Louis, Mo., legal and legislative; Basil Moss, Mt. Vernon, Ill., finance; I. G. Burrell, Bridgeport, Ill., production, engineering and geological; Joseph W. Meehan, Olney, Ill., public relations and publications; R. T. Savage, Mt. Vernon, Ill., taxation, and M. M. Laws, Mt. Vernon, membership.

Corrosion Society Lists Speakers for Annual Meet

Dr. Norman Hackerman, school of chemistry, University of Texas, will address the General Industry Symposium, at the annual meeting of the National Association of Corrosion Engineers, in Chicago April 7 to 10, according to Dr. R. B. Mears, chairman, program committee. His topic will be "Mechanism of Inhibitor Action." Other speakers at this session will be J. T. Gow, Battelle Memorial Institute; B. G. Crane, Ethyl Corporation Research staff; and N. E. Berry, director of research for the Servel Corporation.

In addition to the five technical sessions scheduled, there will also be held in the Palmer House an exhibition featuring the latest developments in material, services and equipment now used in the fight to eliminate this country's corrosion loss.

San Simon Valley, Arizona, Wildcat Is Below 2000 Feet

Drilling on the M. D. K. Fitzwater wildcat in the San Simon Valley continues below 2000 feet in a sand with oil shows.

Two Los Angeles geologists, in separate reports, claim there are three good sands with oil possibilities on the San Simon anticlinal structure.

This test is being drilled near the town of San Simon, Cochise County, in the extreme southeast corner of Arizona. San Simon is on U. S. Highway 86, about ten miles west of the New Mexico border and 130 miles southeast of Tucson, Arizona.

Advertisers' Index

EDITORIAL INDEX, PAGE 17

* Indicates detailed information on products and services included in 1943-44 edition of Composite Catalog of Oil Field and Pipe-Line Equipment.

	Page
*Baker Oil Tools, Inc.	1 and 63
Wm. M. Barret, Inc.	88
*Byron Jackson Co.	6-7
*Cameron Iron Works, Inc.	20
*Cardwell Manufacturing Co.	22
*Clark Bros. Co.	10-11
*Dresser Industries, Inc.	10-11
*Fairbanks, Moorse & Co.	57
Ft. Worth Laboratories	88
General Geophysical Co.	48
*Gray Tool Co.	75
Gulf Engineering Co.	83
*Harrisburg Steel Corp.	4
*Hazard Wire Rope Division American Chain & Cable Co.	III Cover
Houston Laboratories	88
J. H. Howard & Co.	88
*Hughes Tool Co.	IV Cover
Industrial Supply Co.	85
*International Harvester Co.	14
The International Nickel Co.	67
J. P. Machine & Tool Co.	81
Jarecki Manufacturing Co.	2-3
*Jensen Brothers Manufacturing Co.	86
*Jones & Laughlin Steel Corp.	18
Jones & Laughlin Supply Co.	69
*Lane-Wells Company	73
*Line Scale Co.	63
*Link-Belt Co.	8
A. M. Lockett & Co.	87
M & H Valve & Fittings Co.	83
*Magnet Cove Barium Corp.	32
*Mission Manufacturing Co.	Insert, 52-53
*Nordstrom Valve Division Rockwell Manufacturing Co.	I Cover
Norton Equipment Co.	83
*Oil Well Supply Co.	46
*Otis Pressure Control, Inc.	12
Owen Tool Co.	84
*Patterson-Ballagh Division Byron Jackson Co.	16 and 84
*Pelican Well Tool & Supply Co.	74
*Penberthy Injector Co.	62
*Reed Roller Bit Co.	Insert, 40-41
Republic Supply Co.	60-61
The Rig-A-Lite Co.	83
*Rockwell Manufacturing Co.	I Cover
*Schlumberger Well Surveying Corp.	9
*Shaffer Tool Works	65
*Nowery J. Smith Co.	13
*Spang & Co.	80
*Standco Brake Lining Co.	88
Thompson-Hayward Chemical Co.	87
*Thompson Tool Co.	78
Trading Post Section	82
Turbine Bit Co.	79
*Union Wire Rope Corp.	15
United States Steel Corp.	II Cover and 46
*Universal Atlas Cement Co.	II Cover
*W-K-M Company	77
Walter Motor Truck Co.	71
The Weld Inspection Laboratory	88
*Wilson Manufacturing Co.	5
The Youngstown Sheet & Tube Co.	43